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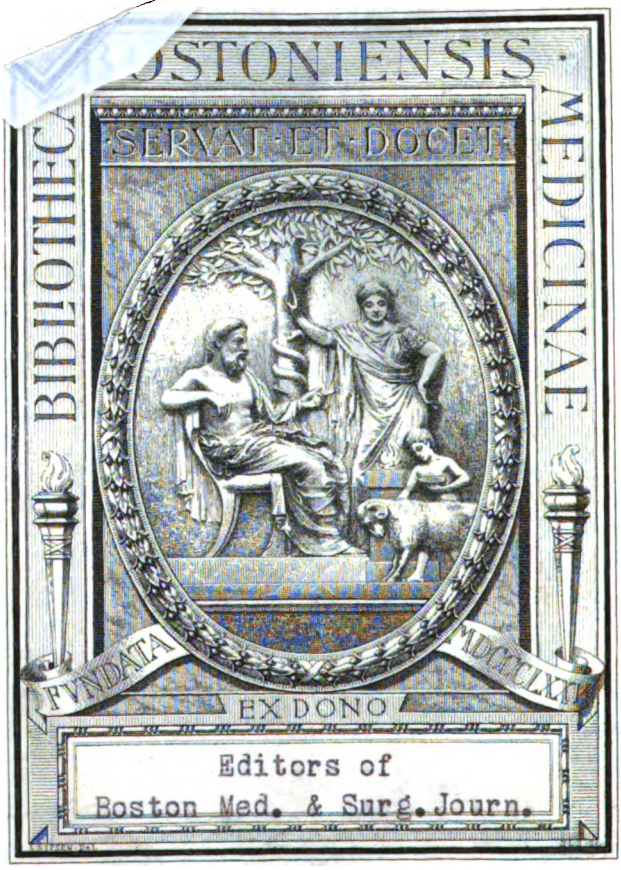
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MINOR MALADIES AND THEIR TREATMENT.

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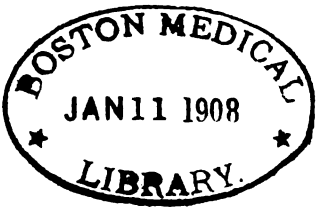
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PREFACE.

THE substance of the following chapters was embodied in some lectures delivered, under various titles, at the Medical Graduates' College and Polyclinic, and subsequently published in the *Clinical Journal* and elsewhere. The matter has been revised, amplified, and rearranged, but the original form has for the sake of convenience been adhered to.

The object of gathering these lectures into the present volume has been to supply, in an accessible form, detailed information on subjects with which the ordinary text-book necessarily deals in a cursory manner. The newly-qualified medical man, while usually admirably equipped in the diagnosis and treatment of what may be called the classical diseases, is nevertheless but very partially informed on many subjects concerning which he will be expected to speak and act with authority as soon as he enters into practice.

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It is these subjects with which I have, in the following pages, attempted to deal in such a manner as may prove of real service not only to young practitioners, but also to those whose opportunities for access to this kind of information have been limited.

In the first five chapters I have considered those maladies which are liable to be of every-day occurrence, endeavouring to differentiate between those which may resemble one another, and suggesting in each case the rationale and the details of the treatment.

Under 'Change of Air' I have briefly reviewed the principles of climatology, now rightly regarded as a highly important branch of therapeutics, and have added some facts concerning spa treatment with which all practitioners should nowadays be familiar.

Under 'General Health' I have endeavoured to set forth the main principles of domestic and personal hygiene in the light of recent advances on the subject.

In the penultimate chapter I have ventured upon some hints on the employment of drugs which did not seem relevant to any of the subjects previously discussed.

In the last chapter, my chief object has been to

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explain the proper procedure in a case of insanity. Except for those who have had special experience, the practical and legal aspects of this matter present many difficulties and pitfalls, the way to meet and avoid which I have tried briefly to indicate.

I am indebted to many friends for advice and assistance in the work which the volume has entailed. To Dr. J. Lorimer Hawthorne I am especially beholden, not only for invaluable aid in correcting the proof-sheets, but also for many useful suggestions. My best thanks are also due to Dr. Maidlow of Ilminster, whose knowledge and experience of many of the matters with which the book deals have been of the utmost service to me.

LEONARD WILLIAMS.

8, York Street,
Portman Square, W.,
August, 1906.

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CONTENTS.

CHAPTER		PAGE
I.	COLDS, COUGHS, AND SORE THROATS	1
II.	INDIGESTION	37
III.	CONSTIPATION, DIARRHŒA, VOMITING, AND GIDDINESS	70
IV.	RHEUMATISM, NEURALGIA, HEADACHE	112
V.	GOUTINESS	155
VI.	CHANGE OF AIR	205
VII.	GENERAL HEALTH	241
VIII.	SOME DRUGS, AND THEIR USES	273
IX.	INSANITY	313
	INDEX	343

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MINOR MALADIES AND THEIR TREATMENT.

CHAPTER I.

COLDS, COUGHS, AND SORE THROATS.

THE inflammatory conditions which are liable to affect the upper air-passages are usually attributed to inclement weather, and the elements, such as damp, cold, and chill, of which such weather is composed. This is a view which is no longer tenable. These inflammatory conditions we now know to be due to the same causes as those which produce inflammation in other mucous membranes—namely, irritation and microbic invasion. There is no doubt that these affections are more prevalent during inclement weather, and although we may admit that the inclemency, by lowering the resisting powers, may, in some cases and in some degree, contribute towards the microbic invasion, it is evident that other and more important factors must also be in operation.

These other factors are provided by the deficient

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ventilation of houses, public buildings and conveyances, which immediately ensues when the weather becomes cold or otherwise disagreeable. Windows and doors, which in summer-time are always kept open, are closed in winter, with the result that pathogenic germs are in the latter season allowed opportunities for exercising their effects which are denied to them in the warmer weather. Moreover, in the summer, people spend much more time out of doors, and are consequently less exposed to the activities of the germs, which, as we know, are more readily killed by sunshine and fresh air than by any other means. Colds, coughs, and associated conditions are due, therefore, not to damp and chill, but to microbic invasion. The surest method of avoiding them is to cultivate efficient ventilation, and the most certain method of encouraging them is to tolerate impurity of atmosphere.

The association of 'chills' with these conditions is very old, and until comparatively recently these 'chills' were regarded as the cause of the malady. Most people now realize that this is not the case. The feelings of chilliness which so often occur at the outset of these complaints are not, as is so often erroneously believed, the cause of the symptoms—they are the primary manifestations of the malady, the sign which proclaims the success of the microbic invasion. The person who 'caught a chill' and subsequently developed a sore throat was, although he failed to realize the fact, already infected when he

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experienced his chilly sensations. It is necessary to insist upon this view, because the laity cling with great pertinacity to the chill theory, with the result that fresh air, instead of being esteemed as a curative and prophylactic agent, is regarded as the deadliest enemy of the human race, and great vigilance is consequently exercised in excluding it by every possible means from houses, public rooms, and public conveyances. Until people become more enlightened, 'colds' and their congeners will continue to afflict them with quite unnecessary frequency.

The commonest of all disorders is the catarrh affecting the naso-pharynx, the larynx, or the larger bronchial tubes, which is known as a **COMMON COLD**. For reasons which have just been considered, the term 'cold,' as applied to this condition, is peculiarly unfortunate; for not only does it lend support to a mistaken view of the cause of the malady, but it tends to obscure what should always be realized in connection with it—namely, that it is infectious. It is a well-recognised fact that colds are very liable to pass from one member of a household to another, which means that they are epidemic in character, and, being epidemic, they must necessarily be caused by bacterial infection. This fact supplies us not only with an obvious means of avoiding them, but it points unmistakably to the proper way of treating them. The infection induces inflammatory action, and in ordinary people the inflammation begins in the nose. In those who, from adenoids or nasal

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obstruction, habitually breathe through their mouths, it may begin lower down in the air-passages; but whenever it begins at a site which can be reached by nasal douching or gargling, it is, if taken in time, a very easy matter to abort a cold. This is done by the simple expedient of washing the microbes out of the part with an antiseptic solution, used both as a gargle and a nasal douche.

It is curious to observe how few people know how to use a nasal douche. There are several patterns on the market, all of which have merits; but the one which I prefer, because I am better acquainted with it than with any other, is called the Bermingham Nasal Douche.[1] It is employed as follows:

Having filled the douche with the necessary fluid, the index-finger is kept on the air inlet, and the nozzle placed well inside the nostril. With the head thrown well back and to one side, the operator then raises the finger, and if the point of the nozzle is not too tightly pressed against the mucous membrane, the fluid will flow into the nostril. What becomes of it then depends upon one thing, and one thing only. If the mouth is kept widely open, and the patient goes on breathing, the fluid will flow out of the other nostril; if the mouth is kept closed, the fluid will find its way into the œsophagus, the ear, or the larynx, giving rise to effects which are always disagreeable, sometimes alarming, and, in the case of the ear, occasionally very serious. The direction to keep the mouth open

[1] That sold as Dr. Woakes' Irrigator is also very good.

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should, therefore, always be dwelt upon. If the fluid does not flow out of the douche at all, the nozzle must be withdrawn slightly.

With regard to the fluid to be used, St. Clair Thomson insists upon the importance of the following three points: The solution should be warm—that is, not below 100° Fahr.; it should be alkaline by reaction, and should be isotonic with the blood plasma. If it is of lower specific gravity than the plasma, there will be painful exosmosis from the pituitary surface; if of higher specific gravity, there will be equally painful endosmosis. In either case the patient will complain of disagreeable and occasionally even of agonizing drawing sensations in the nose. Of preparations which fulfil these conditions, the most elegant and agreeable is that which is sold under the name of Glyco-Thymoline, whose active principal is a salicylate. It has, however, the demerit of being rather expensive. A good substitute is the following:

℞.	Sodii bicarb. Sodii biborat.	} ...	...	...	āā gr. iv.
	Sodii benzoat.	...	...	...	gr. ½
	Eucalyptol ...	...	...	...	♏½
	Menthol ...	...	...	...	gr. ¼
	Aquam ...	...	...	...	ad ℥i

Solve et misce. Sig.: To be used frequently.

The following is also agreeable and efficacious:

Hazeline	...	...	...	♏xx.
Borax	...	...	...	gr. v.
Glycerine	...	...	...	♏v.
Water	...	...	...	to ℥i.

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These solutions should also be used as gargles, so that the infective material may be flushed as rapidly as possible from all accessible parts of the upper air-passages.

By no means the least of the merits of this method of dealing with a nasal catarrh is, that should the catarrh be the first stage of an attack of whooping-cough, we are adopting the measures best calculated to cut short the attack, to provide against the spread of infection, and to prevent the occurrence of the sequelæ to which this disease owes its gravity. So effectual, indeed, is nasal douching in the treatment of this malady, even when delayed until the whoop is established, that to neglect to advise, and even to insist upon it, is in the judgment of many to undertake a very grave and a wholly unjustifiable responsibility. An excellent formula[1] for this purpose, which is substantially the same as that which used to be known as Dobell's Solution, is:

℞. Sodii bicarb. }
Sodii biborat. } ... ... āā gr. xxx.
Listerini ... ... ℥ii.
Glycerini ... ... ℥vi.
Aquam ... ... ad Oi.
M. Sig.: To be used frequently.

When the catarrh commences lower down in the air-passages—*e.g.*, in the larynx—the local abortive treatment is not so easy of application, and is

[1] *Annals of Ophthalmology and Otology*, vol. v., No. 4.

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consequently not always so successful. Nevertheless, it should always be tried and persevered with, because its effects cannot be other than beneficial. The means to this end which I have found most successful consist in the use of oils, such as eucalyptus, well vaporized or atomized in a suitable apparatus, and inhaled vigorously and frequently both through mouth and nose.

The atomizers on the market are numerous; that sold by Messrs. Oppenheimer under the name of the Universal Vaporizer is convenient, efficient, and comparatively inexpensive. The compound sold by the same firm under the name of Neboline No. 1, consisting of eucalyptus, menthol, and Scotch pine, is very agreeable; it is, however, expensive. A useful substitute is as follows:

Oil of eucalyptus	...	...	...	ℿxx.-xl.
Menthol	...	...	...	gr. x.-ʒi.
Liquid paraffin	...	...	...	to ʒii.

Dissolve and mix.

Either ingredient may be used alone. Oil of eucalyptus is stimulating, though less so than thymol (of which 5 grains may be used in place of either of the above, and *dissolved by heat*). Menthol is sedative generally, but it is liable to excite lachrymation in some people.

Aqueous solutions in the form of sprays may also be used, but they are less efficacious than the oleaginous. The following is a useful formula:

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℞.	Pot. permang.	...	...	...	gr. i.
	Sodii chlorid.	...	...	...	gr. v.
	Aquam ...	...	...	...	ad ℥i.

Solve et misce.

Whether the solution employed be aqueous or oily, the patient must be instructed to draw a sharp, deep breath each time the air-bulb of the atomizer is compressed. In this way the medicament will reach the larynx and the larger tubes.

In addition to these local measures it is desirable to increase the powers of resistance to microbic activity—first, by sending the patient to bed, and secondly, by freeing the primæ viæ. This is best done by a mild purgative and a hot bath, or, better still, a hot wet pack.[1] If, in addition to the local symptoms, there should be evidence of constitutional disturbance, such as headache and a slight elevation in temperature, then a single nocturnal dose of opium is invaluable. The form which I prefer is liq. opii sedativus, and of this at least 20 drops should be given. In influenza, taken early enough, I regard opium as almost specific, but even in common colds its effect in soothing the inflamed mucous membrane and in calming the irritated nervous system is most helpful. As a general tonic after a cold, nothing in my experience has proved so useful as quinine; and when giving quinine, it is always better to prescribe it in fluid form, and preferably as an effervescing mixture.

[1] For a full description of the hot wet pack see p. 176.

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℞. Quin. sulph. ... ... gr. iiss.
Acid. citric. ... ... gr. x.
Aquam ... ... ad ℥ss.

M. Sig.: The A mixture.

℞. Potass. bicarb. ... ... gr. x.
Ammon. carb. ... ... gr. iiss.
Syr. simpl. ... ... ℥i.
Aquam ... ... ad ℥i.

M. Sig.: A tablespoonful of the A mixture to be added to two tablespoonfuls of this mixture and taken during effervescence.

Quinine in powder is not only capricious in its behaviour, but, as compared to a solution, it is much more liable to upset the stomach. When dissolved in hydrobromic acid, the drug is comparatively tasteless.

When once the inflammatory process is in full swing, the microbic activity is at an end. We can no longer expect any benefit by killing the organisms; it is only their irritative effect upon the air-passages that we can hope to influence. And if we wish our interference, in a process which is by nature self-terminating, to be really beneficial, we must not lose sight of the time-honoured division of expectorants into soothing and stimulating. If we stimulate the mucosa in the congestive period, the only effect which we can logically expect to produce is that of increasing the patient's sufferings; and, similarly, if during the stage of free secretion we soothe the mucosa, the only reward for our activities will be a tardy and prolonged convalescence. When, therefore, the complaint is of rawness and a sensation of con-

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striction either in the throat or behind the sternum, when the cough is hard, and accompanied at most by some slight mucus, when the skin is harsh and dry and the tongue coated, the only proper treatment consists in soothing, or, as they are very properly called, depressing expectorants. A very old combination and a very excellent one is as follows:

℞. Vin. antimon. } ... ... āā ℿx.
Vin. ipecac. }
Spts. æther. nitrosi ... ... ℿxxx.
Liq. ammon. acetat. ... ... ʒii.
Syr. limonis ... ... ʒi.
Mist. amygdal.... ... ... ad ʒi.

M. Sig.: Every four hours, or, if the distress is great, half the quantity every two hours.

This is a time-honoured prescription, to whose efficacy in relieving congestion and promoting secretion several generations of practical therapists have borne grateful and willing testimony. There is one counter-indication to the use of such a mixture to which it would seem necessary to direct special attention, and that is the existence of any valvular disease of the heart in the patient for whom it is proposed to prescribe it. I have known at least one fatal result to ensue from neglect of this very obvious precaution. Ipecacuanha and antimony, be it remembered, are both very powerful cardiac depressants, and if we are careless enough to give them to a patient with an organ which is already labouring under mechanical disadvantages, we must not be surprised if by so doing we provide the proverbial

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last straw in the heart's burden. When a complication of this nature confronts the practitioner, he must content himself with relieving the congestion by such means as poultices, hot packs, and purgatives, reserving his drug remedies for the relief of any symptoms which may be caused by the state of the heart. I must not be understood to imply, however, that such means as those just indicated should be exclusively reserved for cases in which valvular disease is present. On the contrary, a purgative and a hot wet pack are to be regarded as the very best subsidiary means of combating the condition, whether the intention be to abort an attack or to guide the inflammation to a rapid conclusion.

When the congestion is relieved and freedom of the secretion is established, then, and not until then, is the time for those stimulating measures which many people erroneously prescribe at the outset. As a good example of an expectorant mixture of this class, let me recall one which is as time-honoured as that which I have just quoted; it is as follows:

℞.	Ammon. carb.	gr. v.
	Tr. camph. co.	℥xx.
	Syr. scillæ	℥xxx.
	Syr. tolu.	ʒi.
	Inf. senegæ	ad ʒi

M. Sig.: Every four hours.

It is well to remember that squill upsets the stomach in many cases, so that where this organ is weak this ingredient is better omitted.

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In connection with these catarrhal conditions, of which cough is such a prominent symptom, it will be convenient to glance briefly at some of the other **CAUSES OF COUGH.** We will leave out of consideration those coughs for which a cause is found as soon as the chest is examined—such, for example, as those which arise in the lungs and pleura from phthisis, pneumonia, pleurisy—and those which accompany tumours, aneurisms, and other gross cardio-vascular changes. Nor need such obvious causes as whooping-cough and measles detain us, for it is essentially the coughs which seem to own no relationship which give rise to difficulty. In the presence of such a cough in a child, it is well to remember two very potent but frequently overlooked causes: the one is a collection of cerumen in the ear, and the other is nasal or postnasal obstruction. Cerumen, of course, is very liable to collect in the ears of adults, but in them it more often gives rise to giddiness than to cough, whereas in childhood giddiness is seldom complained of, and cough is common. The removal, by the simple expedient of syringing the ears, of a troublesome cough which has caused anxiety and annoyance to a household for some time, is a proceeding which is highly calculated to increase the reputation of the man who does it and to injure the reputation of him who neglects it.

So far as concerns nasal and postnasal obstruction, there can be no doubt that, though the former is often overlooked, the degree and importance of the latter are

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very generally exaggerated. Where there is any obstruction in the nose itself to the free passage of air, that obstruction should be removed as soon as possible by operative measures. This is also true of gross obstruction caused by adenoids, but it is to be remembered that mild degrees of these vegetations are very rapidly and very effectually removed by pulmonary exercises, and that with the removal of the adenoids the cough vanishes. It is well for a young practitioner to remember that suggestions of the tonsillotome and its congeners do not awaken in private patients the same acquiescent indifference which may be relied upon in those of the hospital class, and that a reputation for a too-ready appeal to operative measures is one which it is prudent to avoid. The very simple details of chest exercises or pulmonary gymnastics should, therefore, be mastered in order that they may be explained to parents and intelligent nurses.[1]

A cough is sometimes excited by a relaxed and elongated uvula, and such a cause should be suspected if the fits of coughing seem to be provoked by the recumbent posture. A relaxed uvula seldom arises independently; it is usually a part of a general relaxation of the neighbouring structures, secondary to nasal or postnasal obstruction or other cause, and may be treated symptomatically by an astringent gargle such as the following:

[1] Harry Campbell: 'Respiratory Exercises in the Treatment of Disease' (H. K. Lewis).

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R. Aluminis... ... ... gr. x.
Glycerini ... ... ʒi.
Inf. rosæ acid. ... ... ad ʒi.
M. Ft. garg. Sig.: To be used frequently.

Or, the parts may be painted at suitable intervals with glycerine of tannin, or with a mixture of equal parts of liq. ferri perchlor. and glycerine. This local treatment should be supplemented by measures directed to the removal of the cause, which is very often gouty or rheumatic. A brisk mercurial cathartic is always helpful.

When the uvula, in addition to being relaxed, is also œdematous, it should be seized at the point by a pair of forceps, drawn into the mouth and freely scarified with a sharp knife. Such a proceeding is very simple, is almost painless, and the relief which it gives is instant and complete. The occurrence of such an œdema, however, even when it has been successfully dealt with by the above means, should never be lightly regarded; for although the majority of cases terminate favourably in a short time, especially when the underlying cause is discovered and treated, in a certain proportion of them the œdema progresses downwards until the glottis is involved. Such a complication, according to Sir Felix Semon, may be suspected if the ordinary redness of a relaxed throat presents a bluish tinge, or if the element of dysphagia is out of proportion to the amount of inflammation present. The patient in such circumstances should be carefully watched,

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and the friends warned of the possible danger. A mixture containing ℥xx. of liq. ferri perchlor. and ℥x. of liq. hydrarg. perchlor. to 3 ounces of water should be given, preceded by a brisk cathartic, and preparations be made either for intubation of the larynx or for the performance of tracheotomy on the occurrence of urgent symptoms.

A cough which presents very distinctive features is that which is associated with chronic irritation either in the larynx or trachea. The irritation often amounts to nothing more serious than a relaxed and slightly catarrhal mucosa, the aftermath of a bronchitis or an attack of influenza. The latter is especially liable to give rise to it, but it may occur independently of any obvious cause, and is then usually the result of anxiety, worry, and overwork. It is more common in relaxing climates, and is aggravated by dull, damp weather. Such a cough may be more or less present throughout the day, but it is, especially in the morning and at night, liable to energetic exacerbations. The amount of matter voided is very small in proportion to the violent efforts which its expulsion seems to entail, and consists mainly of colourless glairy mucus. During the paroxysms the patient's face becomes congested, and so rapid are the expulsive efforts that he is unable to inspire. A climax is often reached by a spasm of the diaphragm, which causes retching or even vomiting.

Having regard to these facts, it is not surprising that such a cough is frequently mistaken for whooping-

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cough, its resemblance to which is further borne out by its obstinacy to ordinary cough-mixtures. If it is remembered that a cough of this kind is essentially a manifestation of debility, there should be no difficulty in affording speedy relief. Perhaps the best remedy of all is a complete holiday in some really bracing climate, such as that of Margate and the other stations on the east coast. This, however, may be out of the question, so that it is well to consider other means.

As a measure for allaying the cough, an acid in combination with glycerine is very useful, and one of the best acids for the purpose is the acid phosphor. dil., of which 25 to 30 minims should be given to the drachm of glycerine in an ounce of water three times a day. To such a mixture the addition of about 2 grains of quinine and 4 minims of tr. nux vom. will be found helpful in relieving the relaxed state of the mucosa, which is the real cause of the trouble. Gargles are of very little service in this condition—they are, indeed, quite useless—but lozenges are most valuable. That which I have found most effective is the Krameria lozenge. It is not very unpleasant, and it certainly helps to restore tone to the affected parts. Patients should be warned in connection with this lozenge that it is not meant to be sucked. It should be allowed to remain between the teeth and the cheek, and to dissolve slowly of its own accord, otherwise its activities will be expended upon the œsophagus, and the larynx remain altogether uninfluenced.

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There is another warning in connection with lozenges of all sorts of which it is well to remind patients, namely, that they should be taken out of the mouth if there is any immediate prospect of sleep; for during sleep, not alone a solution of its ingredients, but the whole lozenge, might easily find its way into the larynx, with disastrous consequences.

If such measures fail to relieve the cough, there need be no hesitation in adding as a temporary expedient, say 10 minims of nepenthe to each dose of the above mixture. Heroin ($\frac{1}{12}$ to $\frac{1}{6}$ grain) is most valuable.

The coughs which arise in association with gastric, hepatic, and intestinal derangements are to some extent characteristic. They are generally loud, short, and frequent, and do not result even in the discharge of mucus; that is to say, they express a reflex and not a direct irritation. Their treatment is necessarily bound up with the discovery and efficient management of the original cause. More often than not this will be found to be chronic constipation; it may turn out to be intestinal worms, inactivity of the liver, gastric dilatation, or some lesion even more serious; the important point to remember being that, apart from aneurism, a cough which is persistent, obtrusive, and futile, generally has its cause not above, but below the diaphragm.

Another kind of cough which is associated with gastric derangements is that which is typically seen in alcoholics. In its main features this cough may resemble closely that just described as laryngeal and

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due to debility; indeed, alcoholics very frequently have a huskiness due to relaxed vocal cords, but the existence of the chronic poisoning is generally easy to detect, and its detection not only prevents any misapprehension as to cause, but points unmistakably the right line of treatment.

Having mentioned *influenza*, it seems fitting that I should say a word or two in connection with it. It may begin as a minor malady, but it is very apt to become the reverse. If the illness be taken in time, and the patient sent to bed until the temperature and other obtrusive symptoms have subsided, the disease is easily kept within the category of minor conditions; but if it is allowed to obtain a 'hold' of the patient, so as to give dangerous sequelæ an opportunity of developing, then influenza is liable to be one of the deadliest of diseases. I know of no condition in the presence of which I feel less hopeful than a pneumonia which is secondary to influenza—a complication which supervenes most frequently, one might almost say exclusively, in cases where the primary condition has been regarded as a passing matter which should not interfere with the ordinary affairs of life. The necessity for early recognition and prompt treatment of these cases, even when slight, is further emphasized by the fact that when they are allowed to be 'ambulatory' the subsequent depression is always much more pronounced and of infinitely longer duration than when they are taken in time and suitably treated.

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It is not that there is, nowadays, any tendency either to overlook influenza or to belittle it when present. The difficulty is, indeed, in exactly the opposite direction, for it is quite certain that many conditions are constantly labelled 'Influenza' which are no more due to the Pfeiffer bacillus than they are due to the Bacillus typhosus. Since about 1890, 'influenza' has become a sort of diagnostic rubbish-heap on to which is cast every febrile state which cannot with certainty be referred elsewhere. There is really no reason for this, because the Pfeiffer bacillus is as characteristic as the Klebs-Loeffler or any other whose presence is regarded as distinctive of a certain disease, so that a positive diagnosis of so highly infectious a condition should not be made without the confirmatory evidence which the presence of the bacillus affords. It is, of course, often exceedingly difficult to be certain as to the exact nature of a febrile condition at first, or even subsequent, visits, but there is no excuse for seeking to overcome the difficulty by idly attaching a label, which, though it may be satisfying, is wrong. It is much better to be frank in such matters; the practitioner who is straightforward always commands more confidence and greater respect than the one who poses as omniscient.

The presence of real influenza may always be suspected from the sudden onset of symptoms with a high temperature. The symptoms may vary in degree and in kind (they are divided into nervous, respiratory, and gastro-intestinal), and their severity

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is not often great, but when they appear suddenly—so suddenly as to suggest a blow from an unseen hand—then the probability is that they are influenzal in origin. Occasionally, of course, the symptoms themselves are overwhelming in their severity—so overwhelming, in fact, as to convert a strong, healthy man into a prostrate mass of aches and pains in less than five minutes. The temperature at the onset is often high, reaching 105° F. or over, but it may be quite low, and even, according to some, subnormal from the first. Typical cases in an epidemic are by no means difficult of diagnosis, but atypical cases, especially where they are sporadic, should always be referred to the bacteriologist before a positive opinion is given.

If the disease is seen at its onset, the patient ought to be sent to bed at once, and kept there until the temperature has fallen to normal and the attendant discomforts have ceased. There is nothing which hastens this end so much as an initial dose of opium. I was first made acquainted with its merits about the time of the 1890 epidemic by a note in one of the journals by Sir Samuel Wilks, who told how, according to his diary, Prince Napoleon had been cured by such a dose, which had been prescribed by Corvisart. Since that time I have appealed to it on many occasions, and, if in a sufficiently early stage, never in vain. It is, however, necessary to give a full dose, say 20 to 30 minims, of liq. opii. sed., if the beneficial effect is to result. This effect shows itself, as a rule,

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in a remarkably short space of time, and consists in the disappearance of the pains and the production of deep and refreshing sleep. So much impressed have I been with this line of treatment that I have learned to regard opium almost in the light of a specific against the Pfeiffer bacillus. That it should relieve the pains and soothe the irritated nervous system is not on general principles surprising, but that it should effect its purpose so rapidly, so completely, and so permanently, points to some action other than the ordinary effect of the drug, and is highly suggestive of some specific influence.

When the acute stage is past, quinine seems to be the most useful drug. It appears to render the subsequent depression less profound and of shorter duration. In connection with this depression, it is well to remember that it is often intensified by excessive and injudicious feeding. The 'keeping-up' régime, which is so commonly prescribed during this stage, is regarded by the anxious friends as the height of therapeutic wisdom, but in reality it is liable to be quite the reverse. The system is very apt to become overloaded with effete matters, and the poisons have in consequence fewer opportunities for escape. The best thing to do with such a patient is to see that the food is simple and nutritious, containing a little meat and some alcohol in the form of a well-matured wine, and to arrange for a complete holiday at the seaside as soon as possible. The locality chosen must depend, among other things,

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upon the time of year and the type of the attack, but bracing climates are as a rule strongly indicated.

The next subject to be considered is that of **SORE THROAT.** There are, of course, several kinds of sore throat, and I wish it could be said that the degree to which specialism in this department has attained had been productive of any corresponding degree of precise knowledge as to their varieties and causation. To the plain man, where it does not mean scarlet fever or some similar condition, in which accompanying symptoms are present to clear the issue, sore throat spells tonsillitis; and with regard to a tonsillitis, the first point to decide is whether or not it is diphtherial. In these days of bacteriological investigation and antitoxin treatment, the question may not seem to present the same importance as it did in the days when we were still without such assistance. But bacteriological investigation takes time, and reliable antitoxin is not always easy to procure, so that it is well to be prepared with a plan of campaign which leaves such luxuries out of account.

Speaking as one who has had more than his fair share of experience in diphtheria, I may say that I know of no condition which, in its slighter forms, at any rate, is more difficult of diagnosis. It is, even now, no uncommon thing for a sore throat which has been dismissed as a passing matter tardily to vindicate its true character by a legacy of alarming and even fatal paralysis. Apart altogether, there-

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fore, from the question of preventing the spread of infection—a question whose importance and urgency cannot be too strongly insisted upon—it is essential that we should not, if we can help it, fail to recognise a case of diphtheria when we see it. Now, there are two aids to diagnosis which, partly, perhaps, on account of the luxury of the bacteriological short-cut, seem to be falling into increasing disuse, of which, for this reason, and as being easy of performance and capable of yielding information of the utmost value, it is well that we should remind ourselves. The one is the state of the knee-jerks, the other the state of the urine. It is generally known, perhaps, that in diphtheria the knee-jerks are liable to disappear, and that albumin is often present in the urine. But it does not seem to be sufficiently realized that these phenomena, when they do occur, occur early, sometimes very early, in the disease, and that it is therefore our bounden duty to look for them in every case of sore throat, however slight, which presents itself to our notice.

Now, let us suppose that we have detected such a case, and that a considerable amount of precious time must necessarily elapse before any reliable antitoxin can be obtained. What are we to do? Taking the ordinary precautions as to isolation, etc., for granted, the first thing to do is to give the patient a mixture containing biniodide of mercury. Before the days of antitoxin I had learned to have so much confidence in this drug that I came to regard the occurrence

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of a case of diphtheria with something very nearly approaching to equanimity. The biniodide is insoluble in water, though freely soluble in the presence of an excess of iodide of potassium. The following is a convenient way of prescribing it:

R.	Hydrarg. perchlor.	gr. i.
	Potass. iodid.	gr. xxx.
	Glycerini	ʒii.
	Aquam	ad ʒviii.

In such a mixture a double decomposition takes place between the two salts, and the amount of resulting biniodide is rather less than the original amount of perchloride, so that each ounce contains rather less than $\frac{1}{8}$ grain. The ordinary tablespoonful is, therefore, a perfectly safe dose for an adult; and if its effects are carefully watched, it may be frequently repeated. The glycerine is added with the view of causing the mixture to adhere to some extent to the fauces, and of thus securing a local as well as a constitutional effect. The biniodide of mercury as a bactericide is four times as powerful as the perchloride, and it has no tendency, as the perchloride has, to throw down an inert albuminate when brought into contact with the tissues. Whether for these reasons, or because it is especially inimical to the Klebs-Loeffler bacillus, in the same way that nitrate of silver is especially inimical to the gonococcus, there can be no doubt that, antitoxin apart, HgI_2 is a far more effective weapon in combating diphtheria

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than any drug, inhalation, or pigment which has ever been introduced.

In severe cases of diphtheria, whether or not antitoxin be available, an early appeal should be made to strychnine, preferably by subcutaneous injection. This drug is believed to present a direct physiological antidote to the action of the toxins, by stimulating the very centres which the toxins tend to depress. Now, in a bad case, the toxins are being manufactured in large quantities, so that to be efficacious the drug must be vigorously pushed. The ordinary dose of $\frac{1}{60}$ to $\frac{1}{30}$ grain is quite useless even in the case of children. If the effects are watched, it will be found perfectly safe to give $\frac{1}{16}$ or $\frac{1}{12}$ grain four times a day for three or four days, and those who have not tried it will be surprised to find how well it is tolerated. Strychnine is also infinitely the best drug for the treatment of diphtheritic paralysis. It is then best given by the mouth in combination with liq. ferri perchlor. (*vide* formula on p. 29).

When we come to consider the forms of tonsillitis other than diphtheritic, I have to confess to an absence of settled convictions. That tonsillitis[1] may be, and often is, a manifestation of true articular rheumatism, giving rise to endocarditis and causing valvular disease of the heart; that it may, on the other hand, own no such relationship, and, even after

[1] 'Tonsillitis' and 'quinsy' are terms which are frequently confused. Tonsillitis means an inflammation of the tonsil itself, whereas quinsy signifies a peritonsillar inflammation which frequently leads to abscess formation.

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repeated attacks, be followed by no such consequences; that under the name of 'septic throat' it is very properly recognised as due to bad drainage; that not infrequently, especially in autumn, it seems to become epidemic; and that, finally, it often arises under circumstances so ill defined that it is forced to herd with a motley company of congeners and aliens in that enormous pigeon-hole labelled 'Chills'—these and perhaps some other facts are familiar to us, but connection and co-relation between them there is none. Fortunately, however, the aspect of the matter which we are considering—namely, the mere utilitarian one of treatment—is but little affected by our ignorance, but before we discuss that question it is desirable that one point in the diagnosis should be emphasized.

There is, as I have said, nothing in the state of the throat itself to help us to determine whether a tonsillitis is, or is not, of rheumatic origin, and as the settlement of this question is of paramount importance to the patient, it cannot be too strongly insisted that a careful examination of the state of the heart should be as much a matter of routine in a case of tonsillitis as it is in chorea or articular rheumatism. And in examining the heart, the feature to which particular attention should be directed is its size. The detection of any signs of dilatation, especially of the right heart, is of the utmost importance, for it enables us to deal with the condition while it is still amenable to treatment. If we wait until a murmur has declared

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itself, the time for effective interference may be already gone. With some people the examination of the heart is comprised in the use of the stethoscope; but auscultation is in reality far less important than percussion, and he who wishes to detect the earliest signs of impending mischief will do well to bear in mind that most excellent clinical rule, 'Eyes first, fingers next, ears last.'

In the matter of the treatment of a tonsillitis, the first point of importance to be observed is the degree of the accompanying fever. If this is slight, the fact should give rise to a strong suspicion of the case being diphtheritic, and steps should immediately be taken to settle the diagnosis by bacteriological examination. In most illnesses a moderate elevation of temperature means a moderate degree of anxiety, but sore throat provides a notable exception to this very obvious rule, which ought always to be borne in mind, not only because of diphtheria, but also because some, at any rate, of the worst septic throats are often attended by a quite insignificant amount of fever.

If the temperature is high, which in most cases of tonsillitis, other than diphtheritic, it usually is, the tincture of aconite has an excellent effect. When the thermometer registers 105° F. in a patient in whom we need not fear a certain amount of cardiac depression, tincture of aconite, in doses of 5 minims every four hours, or, better still (where its effects can be watched), in drop doses hourly for a few hours, will bring down the temperature rapidly, and will confer a

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degree of comfort on the patient which is really remarkable. And the higher the temperature, the greater is the confidence with which the drug may be prescribed. If a tonsillitis is taken early enough, it is quite possible to abort it by means of aconite alone. I have learned, however, not to depend on aconite alone. I find that it acts better, or, at any rate, that its action is not impaired by the presence in the mixture of other drugs directed against the local and constitutional aspects of the case. For instance, where the case is unquestionably rheumatic in origin, apart from the salicylates, upon whose importance I need not dwell, I have found guaiacum to be a most trustworthy remedy, and, in spite of the inelegance of the resulting mixture, I can fully recommend this formula:

℞.	Potass. chlorat.	gr. x.
	Tr. aconiti	℥v.
	Tr. guaiac. ammon.	ʒi.
	Mucilag. acaciæ	℥xx.
	Aquam	ad ʒi.

M. Sig.: Every four hours.

As soon as the temperature has fallen the aconite should be discontinued; but the other ingredients, the chlorate of potassium and the guaiacum, may be persevered with for some time.

When a sore throat is neither diphtheritic nor rheumatic, it is always safe to treat it as due to some septic influence, and the treatment of such conditions is one of the most satisfactory things in all thera-

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peutics. The following mixture, with such slight variations as special circumstances may suggest, constitutes what the advertisements of quack medicines describe as a sovereign remedy, one of the very few with which I am acquainted:

R.	Tr. aconiti	♏ii.-v.
	Potass. chlorat.	gr. v.
	Liq. ferri perchlor.	♏xx.
	Liq. hydrarg. perchlor.	♏x.
	Liq. strychninæ	♏v.
	Glycerini	℥ii.
	Aq. chlorof.	ad ℥ss.

M. Sig.: Every four hours, or, better still, half the quantity every two hours, at any rate until the temperature falls.

As in the case of the previous mixture, the aconite should be stopped as soon as the temperature subsides, and the other ingredients continued until the local conditions in the throat are satisfactory.

This prescription owes its efficacy to its antiseptic powers. Few people seem to realize that liq. ferri perchlor. is, when taken internally, a bactericide of the utmost value. It was no doubt originally suggested in sore throat because of its astringency, but this attribute would not even partially explain its almost magical effects in a tonsillitis of septic origin. The liq. hydrarg. perchlor. is added with the view of accounting for any cocci which may escape the attention of the iron salt, and the glycerine to enable the mixture to remain longer in contact with the fauces than it would otherwise do. Strychnine, in addition to being a general tonic, appears to have an antiseptic effect

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in most cases of septic sore throat, and it is, therefore, always well to include it. Chlorate of potassium is given more as a matter of routine than anything else. It has a reputation in inflammatory states of the pharynx, and if it does no good, it certainly does no harm. Treated with an initial purgative of a few grains of calomel, and by perseverance with this mixture, a tonsillitis which is neither diphtheritic nor rheumatic will yield completely in an astonishingly short space of time.

In the matter of the taking of temperatures, not only in cases of sore throat, but in all cases, there is a word of warning to which I should like to direct attention. It has been proved that the temperature in the mouth is very materially influenced by many comparatively insignificant conditions which are purely local to the mouth itself. Thus hot fluids such as tea will raise the temperature two or even three degrees, and maintain this elevation for two hours or more. Food of any sort will also raise the temperature, though to a slighter degree, and cold fluids will depress it. The moral of this is that we should never be satisfied with a temperature which has been taken in the mouth. This is, of course, infinitely the most convenient place in which to take it, especially in a person fully dressed, but we do well to remember that a record so obtained is very unreliable under all circumstances, and that it is conspicuously so when any portion of the buccal or pharyngeal mucous membrane is inflamed.

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There is a condition which, as it is often described as a **FEVERISH COLD**, it is as well to notice here. It is, indeed, known to fame by various names. The scientifically-minded call it 'febricula,' those who seek to be impressive describe it as a 'chill on the liver,' while everyone is very liable to mistake it for influenza. It consists of a general feeling of malaise, with pains in the back and limbs, accompanied by a temperature which may ascend in forty-eight hours to 102° F. or over. It may be distinguished from influenza by its comparatively gradual onset, by the fact that the pains, though severe, are aggravated by movement and are always worse at night, by the comparative absence of other symptoms, and by its very rapid defervescence under suitable treatment. The condition has nothing to do with cold; it is as a rule connected with the gouty diathesis even in young people, and is essentially a myalgia or 'muscular rheumatism' distributed over a wide area.[1] If it is seen early enough—that is, before the temperature has risen above 100° F.—a hot wet pack (*vide* p. 176) will probably cut it short. The primæ viæ should be cleared, and aspirin given in doses of 10 to 15 grains every three hours until the symptoms subside. In people who are otherwise healthy I have often known a single dose of 20 grains of aspirin to remove all symptoms in a few hours. It is important to recognise this condition, because the mistake of confusing it, as is now so often done, with influenza

[1] See Chapter IV.

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creates very unnecessary alarm in the patient's household and amongst his friends. Moreover, the condition being allied to goutiness, a wrong diagnosis of influenza will almost certainly lead to a disastrous line of after-treatment. The prostration which follows even mild attacks of real influenza suggests a tonic and stimulating régime, whereas the after-management of febricula should be directed to prevent a recurrence by combating the gouty tendency which predisposes to the condition. The person who has had influenza 'fourteen times in the last three months' has probably never had influenza at all. The attacks have been due to febricula, and their constant recurrence has been the result of a wrong diagnosis, and its logical outcome, mistaken treatment. In a great many of these so-called influenzal attacks the real cause is toxæmia of gastro-intestinal origin arising from abuse of meat foods, alcohol and tobacco, leading to high arterial tension, a question which is discussed in the chapter on Goutiness.

Sore throats of septic origin are occasionally overlooked. Where the invasion is severe and the constitutional symptoms are consequently pronounced, the local discomfort is apt to be lost sight of; the patient does not mention the throat, and its condition is therefore not investigated. The high temperature being thus the only objective sign, the case is liable to be regarded as one of typhoid, a watching policy is pursued, and no improvement results. It is therefore a good rule to examine the throat carefully in

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every case where a high temperature is not due to some obvious cause.

In cases where there is reason to suspect typhoid, there is one simple diagnostic point which, when present, is very helpful. It is that in this disease, though the temperature is usually very high, the pulse may be low, the one registering, say, 104° F. and the other from 70 to 80. In cases of undoubted typhoid a rapid pulse is of evil prognostic omen.

ADDITIONAL FORMULÆ.

Nasal Washes.

Lotions intended for cleansing the nose may be used as simple hand-washes, or placed in a nasal douche, irrigator, or spray. The nasal douche of any apparatus on the siphon principle is to be avoided, the great and continuous pressure exerted rendering its use dangerous. A very simple method is to sniff the lotion from the palm of the hand or from a shallow cup or bowl up through the nose, letting it pass well into the throat and returning it through the mouth. This should be practised before rather than after meals, as it may excite retching or even vomiting. About an ounce and a half of solution should be used at each time, and it should be employed comfortably warm (about 100° F.). The use of a nasal irrigator should, however, where possible, always be substituted for the above.

A spray may also be used, but it is not nearly so

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effective as a douche. An instrument giving as coarse a spray as possible should be chosen.

The following formulæ have stood the test of time :[1]

℞. Sodii bicarb. ... ... gr. iii.
Sodii biborat. ... ... gr. iii.
Acid. carbol. ... ... gr. i.
Sacch. alb. ... ... gr. v.
Aquam ... ... ad ℥i.

M. et solve. Detergent.

℞. Sodii bicarb. ... ... gr. ii.
Sodii biborat. ... ... gr. ii.
Sodii chlorid. ... ... gr. ii.
Sacch. alb. ... ... gr. v.
Aquam ... ... ℥i.

M. et solve. Detergent.

℞. Phenazon. ... ... gr. v.
Zinci sulph. ... ... gr. ss.
Ext. hamamel. liq. ... ... ♏xxx.
Aquam ... ... ad ℥i.

M. Astringent.

℞. Tr. benzoin. co. ... ... ♏v.
Sodii biborat. ... ... gr. v.
Sacch. alb. ... ... gr. v.
Aquam ... ... ad ℥i.

M. Sedative.

℞. Creolin ... ... ♏v.
Sodii chlorid. ... ... gr. v.
Aquam ... ... ad ℥i.

M. Antiseptic.

℞. Potas. permanganat. ... ... gr. $\frac{1}{8}$
Sodii chlorid. ... ... gr. v.
Aquam ... ... ad ℥i.

M. Detergent.

[1] See Pharmacopœia of the Hospital for Diseases of the Throat.

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℞. Sanitas ... ... ℥xxx.
Sodii chlorid. ... ... gr. v.
Aquam ... ... ad ℥i.
M. et solve. Detergent.

Seigle's steam spray producer is a very useful apparatus when a warm spray is preferred. Used in this apparatus, the following was a favourite combination of the late Mr. Arthur Durham's in the treatment of 'hospital throats':

℞. Boracis ... ... ℥iss.
Acid. boric. ... ... gr. xl.
Tr. iodi. ... ... ℥ss.
Liq. morph. hydrochl. ... ... ℥i.
Glycerine ... ... ℥i.
Aquam ... ... ad ℥viii.
M.

This may be used for ten minutes every hour, and will be found very soothing.

Gargles.

About half a fluid ounce should be taken in the mouth for each act of gargling, and this should be repeated four times on each occasion. Gargles should be used about every four hours.

℞. Potas. chlorat. ... ... gr. xii.
Sodii bicarb. ... ... gr. vi.
Potas. bicarb. ... ... gr. vi.
Aquam ... ... ad ℥i.
M. Ft. garg. Detergent and sedative.

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℞. Resorcin ... ... gr. x.
Aquam ... ... ad ℥i.
M. Ft. garg. Antiseptic.

℞. Liq. sodæ chlorinat. ... ... ♏xxiv.
Aquam ... ... ad ℥i.
M. Ft. garg. Disinfectant.

The following is a useful snuff:

℞. Menthol ... ... gr. viii.
Iodol ... ... gr. lxxx.
Acid. boric. ... ... gr. cc.
Sacch. alb. ... ... ℥i.
M. Sig.: To be used as a snuff.

Cough Mixtures.

To allay Tickling Cough.

℞. Tr. camph. co. ... ... ℥ii.
Oxymel scillæ ... ... ℥ii.
Syr. tolu. ... ... ℥ii.
Glycerin. ... ... ℥ii.
M. Dose: 1 drachm.

℞. Heroin ... ... gr. $\frac{1}{24}$
Acid. hydrocyanic. dil. ... ... ♏xxx.
Oxymel scillæ ... ... ℥ii.
Syr. limonis ... ... ℥ii.
Aquam ... ... ad ℥i.
Dose: 1 teaspoonful.

An exceptionally agreeable mixture is that sold by Ferris and Company of Bristol under the name of syr. pectoralis rub.

A useful lozenge is:

℞. Menthol ... ... gr. $\frac{1}{8}$
Pulv. glycyrrhizæ ... ... gr. ii.
M. Ft. 'nigroid.'

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CHAPTER II.

INDIGESTION.

I INTEND in this chapter to confine myself to the consideration of those forms of dyspepsia which are not of organic origin. The dyspepsias which arise in association with cancer, with ulcer, with hepatic and renal cirrhosis, with pulmonary tuberculosis, and other forms of structural disease, are exhaustively considered in the text-books, whereas the purely functional dyspepsias—the dyspepsias, that is, whose symptoms are due to such faults as those of secretion and motility—though far more frequently encountered in daily practice, are not so considered. These cases occur in people who are for the most part otherwise healthy, who are impatient of the disabilities and discomforts which the malady imposes upon them, and who are impatient also of anything short of prompt and complete relief. Their successful treatment is, therefore, a matter of considerable importance.

To this end our first care must be to learn to classify them properly. In view of the multiplicity of qualifying and would-be distinctive adjectives which are generally found in connection with the

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term 'dyspepsia,'. this would not at first seem to be a simple matter. In quite a recent text-book the varieties of gastric indigestion are given as follows: atonic, gouty, renal, irritative, flatulent, and acid; and reference to other text-books would in all probability reveal several more. But, in that they suggest essential distinctions, these terms are in reality misleading. It is better, therefore, to discard them altogether and to classify functional dyspepsias under two heads only—the sthenic and the asthenic. These two present distinct and definite clinical types, with different pathology, different symptomatology, and very different treatment. All else is chaff and dust, which let the wind blow whither it listeth.

But before we proceed to the details of this classification, it is necessary to consider briefly the main facts of gastric digestion in the light of the researches of Pawlow and others, which have recently been admirably crystallized in a short paper by Dr. Langdon Brown.[1]

We know that the masticated and insalivated food passes from the mouth along the œsophagus into the stomach, where it is acted upon by pepsin and HCl, and the arresting feature in connection with the above-mentioned researches is the prominent part which, in their light, must henceforth be assigned to the action of HCl. It used formerly to be believed that pepsin was the predominant partner

[1] 'On the Rational Treatment of Gastric Disorders,' *Practitioner*, October, 1904.

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in this association; it is now recognised that HCl is of infinitely more importance. The presence of the acid is essential to the activity of the ferment, and if HCl is not present in sufficient degree, no conversion of the food can possibly take place. The mass becomes a mere mechanical irritant to the mucosa, and excites only the outpouring of alkaline mucus. This in its turn surrounds the mass and renders its permeation by the digestive fluids still more difficult. But this is not all. HCl, which is thus seen to be necessary to gastric digestion, is by the above-mentioned researches shown to be necessary also to pancreatic digestion. 'Bayliss and Starling have shown that the hydrochloric acid of gastric juice acts on the *pro-secretin* stored in the intestinal mucosa to form *secretin*, a specific stimulant to the flow of pancreatic juice. . . . Therefore, if there is not a due secretion of acid, pancreatic digestion is impossible.'

Now, we know that the functions of the pancreas include the digestion of fats and the elaboration of such of the carbohydrates as have escaped digestion by the saliva, so that it is evident that the absence of a proper quantity of HCl in the gastric process entails serious effects not only upon the digestion of proteids, but upon the digestion of all the proximate principles of food, proteids, carbohydrates, and fats. It is therefore impossible to overestimate the importance of the presence in full force of this constituent of the gastric juice.

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Let us now look at the other side of the picture, and consider for a moment what happens when the hydrochloric acid, instead of being deficient, is excessive in quantity—a state of matters which, as we shall see presently, may be the result of various causes. In the normal person no more gastric juice is secreted at any individual meal than is necessary to the digestion of that meal, so that in a certain time after the meal is finished the secretion slows off and eventually ceases.[1] If the stomach supplies too much juice, or if the supply is continued beyond the limits of the digestive requirement, the food-mass becomes too acid to be allowed into the duodenum. The pyloric sphincter therefore contracts and prevents the passage of the food out of the stomach until the bile and pancreatic juices are present in quantities sufficient to neutralize its acidity. This may take some hours, and the gastric mucosa and nerve-endings are, during the interval, subjected to continual irritation, which varies, of course, in degree, according to the amount of acid present in excess.

Now, it is possible to bring all cases of functional dyspepsia under these two heads — those in which hydrochloric acid is deficient and those in which it is excessive. And, first, it is necessary to remember that the *causa causans* of the dyspepsia is the same in both—that is, the retention of food in the stomach long after that viscus ought to have finished with it. In both cases the mass becomes a species of foreign

[1] *Vide* Starling, Croonian Lectures, 1905.

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body, giving rise directly to pain, the outpouring of mucus, and the development of flatulence; and indirectly to languor, sleeplessness, and irritability of temper. These symptoms, then, are common to both classes, and indicate merely that we have a dyspepsia to deal with. They are liable to be present in any and every case of indigestion, and consequently they afford no assistance in classification.

As bearing on this fact, it is well to remember that there is a line of treatment which, in so far as it is successful at all, is equally successful in both. This is the practice of giving alkalies before meals. Alkalies were originally given before meals on the supposition that they excited the flow of hydrochloric acid and pepsin in the stomach. As the practice gave relief to a very large number of dyspeptics, the supposition was held to be correct until the researches already referred to conclusively proved that, so far from promoting the flow of gastric juice, the alkalies very materially retard it.

How, then, are we to explain the benefits which have admittedly followed the practice of prescribing alkalies in all forms of dyspepsia? In the light of what we have already seen as to the mechanism of dyspepsia, the explanation is not very far to seek. The mass which tarries in the stomach (whether the tarrying be the result of too little hydrochloric acid or of too much) sets up an irritation, which in its turn provokes the outpouring of mucus and the development of flatulence, the evil effects of

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which are still present when the time for the next meal has arrived. If, however, just before that meal is taken—say half an hour before—we put into the stomach a draught of water containing an alkali, we are applying lavage to that stomach—we are washing it out with a solution which is of all others the best calculated to remove the sticky mucus which is adhering to its walls and occluding the mouths of the secreting glands.

Herein, then, resides the efficacy of the practice of giving alkalies before meals—the organ is relieved not only of the mucus, but also of the undigested residue of the last meal, and is thereby cleansed and prepared for the reception of the next. And, as I have said, it matters nothing in this connection which form of dyspepsia we are dealing with, for in both there are undesirable matters to be removed, and in the treatment of both, a clean stomach for each meal is a great desideratum.

One practical point emerges from these considerations, namely, that if our desire is to wash out the stomach, we should see to it that the fluid is not stinted. The alkali — say 10 grains of sodium bicarbonate—should therefore be dissolved in, or immediately followed by, a full half-pint of water, preferably hot.

In one other respect, and in one other only, is it unnecessary, from the point of view of treatment, to distinguish between the two forms of dyspepsia—I mean the freeing of the primæ viæ. Above all

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things, let the state of the bowels engage the most serious attention. The presence of constipation will obscure every issue and nullify every therapeutic effort. The best initial measure is undoubtedly a dose of calomel. This drug is not only a purgative, but it is also the very best of all intestinal antiseptics. Further, the excretory function of the skin should not be despised. It is too large a question to be discussed here, but there are many facts which point to the conclusion that some of the more obscure phenomena of indigestion are to be explained by assuming that defective cutaneous activity reacts in a special manner upon the gastric secretions. Be this as it may, a hot bath or a hot wet pack at the onset of treatment will often make all the difference between prompt and tardy relief.

Now how are we to distinguish between these two forms of dyspepsia, the sthenic and the asthenic? There are certain marked differences both in the type of patient and in the nature of the symptoms which cannot fail to strike the careful observer. The sthenic form occurs in people who seem otherwise to be in robust health — people who are for the most part strong, active, and energetic, and who are seldom teetotallers. The asthenic form appears in weakly, nervous, convalescent, or overworked persons who may be teetotallers, but who are generally tea-drinkers. The one is essentially an active, positive, the other a passive negative, type; and the distinctions between the

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symptoms are in consonance with these characteristics. The sthenic tongue is firm and generally furred; the asthenic is flabby, frequently indented at the edges, and generally clean and glazed. The sthenic pulse is slow and full, the asthenic quick and feeble. The sthenic appetite is voracious and ever present; the asthenic is weak, capricious, and often absent. In the sthenic, the discomfort consists of a sense of epigastric fulness; in the asthenic, it consists of actual pain in the epigastrium striking through between the scapulæ. In the sthenic, a full meal relieves the symptoms; in the asthenic, it aggravates them. In the sthenic, the mental state is one of irritability; in the asthenic, it is one of depression. But perhaps the most striking, as it is certainly the most diagnostic, distinction is presented by the period of onset of the symptoms. This in the sthenic is delayed until towards the end of the digestive process—that is, from four to five hours after a full meal; whereas in the asthenic the discomfort, always more or less present, becomes acute within half an hour of the ingestion of food.

There is one symptom which is often mentioned in connection with dyspepsias of all sorts which, nevertheless, occurs only in the sthenic form — namely, heartburn. It is by no means always present, but when it is there can be no shadow of doubt as to the class to which the case belongs. The same may be said of pyrosis or the gushing of alkaline fluid from the mouth. This fluid is in reality saliva

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of a rather higher alkalinity than normal, and its secretion represents an effort on the part of Nature to relieve the symptoms by introducing an alkali into the stomach. It only occurs in very severe cases, but when it does occur the diagnosis is no longer in doubt.

The matter of differentiation is not, however, always so easy as the above distinctions would seem to indicate. It must be remembered that we are dealing almost exclusively with subjective phenomena; that not all patients are intelligent, and that most dyspeptics tend to exaggerate their symptoms. But, fortunately, where, after due consideration, a doubt does remain in our minds as to whether we are dealing with a sthenic or an asthenic case, it is speedily set at rest by the results of treatment. For, as will be readily understood from the essential features of the two conditions, what will relieve the one will tend to aggravate the other. If, for example, we give a dose of HCl to a patient suffering from sthenic dyspepsia, we thereby increase the amount of the offending material, and add conspicuously to his miseries; and, similarly, if to a stomach which is crying aloud for HCl we respond by administering an alkali, our interference can have but one effect—that, namely, of aggravating the existing mischief. This refers, of course, to medicines given after meals.

As I have already pointed out, medicines given before meals have the effect of washing out the stomach, but they exercise no influence whatever

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either upon the secretion of gastric juice or upon the digestion of the food itself. Effectually to treat either form of dyspepsia, then, it is necessary to rely absolutely upon the action of the drugs which are introduced into the stomach after the meal is taken.

Let us now take a case of **STHENIC DYSPEPSIA**, and see how it should be treated. We will assume the patient to be a man of middle age who has at one time been fond of athletics, but who has been obliged by business exigencies to give them up, who is capable, hard-working, and energetic. He complains of epigastric discomfort after food, flatulent eructations, and mental irritability. The symptoms are not pronounced until some time has elapsed after a meal; indeed, he not infrequently associates them with the period *before* a meal, and may attribute them to hunger, a theory which obtains support from the fact that a feeling of 'sinking' in the epigastrium is often present, and that he is always better immediately after he has fully satisfied his rather vigorous appetite. He dines at 7.30 p.m., and is very often awakened between four and five in the morning with heartburn, pyrosis, sneezing, hiccoughing, asthmatic attacks or other troubles, which, however, rapidly subside as soon as he is able to 'disperse the wind' of which his stomach appears to be full.

In the daytime he is liable to suffer so much from palpitation that he feels sure there must be something wrong with his heart.

The first thing to be done with such a man is to

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clear his primæ viæ. He should be given a dose of calomel (remembering that those of dark complexion bear this drug better than those who are fair); he should be ordered a turkish bath, an electric light bath, or an ordinary hot bath, and induced, if possible, to take some daily exercise in the open air, or at least at the open window. The unwisdom of wearing wool or flannel[1] next his skin should be explained to him, and he should be enjoined to masticate his food adequately. These and other warnings suggested by the special circumstances of the case must be emphasized, but the great, the paramount, the urgent need in such a patient is for an antacid to be taken either as soon as his symptoms commence, or, if possible, immediately before their onset.

The antacid which is most popular is the bicarbonate of sodium, but this salt is an antacid pure and simple, and is possessed of no sedative properties. It also has the disadvantage, especially where flatulence is troublesome, of increasing the amount of gas in the stomach. What is required is an antacid agent which is free from this objection, which at the same time is possessed of sedative properties. Such an agent is bismuth. There have been many differences of opinion regarding the merits of this drug, even so great an authority as Sir William Roberts going so far as to deny that it was an antacid at all. Sir Lauder Brunton, Dr. Burney Yeo, and other authorities, however, appear to esteem it very highly,

[1] See Chapter VII.

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and this view is supported by most of those who have made a systematic trial of its action. The disappointments attending its use in suitable cases have been almost certainly due to its employment in insufficient quantities. The ordinary B.P. doses are utterly useless; the minimum which I employ is: of the subnitrate 25 grains (B.P. 5-20), and of the liq. bismuth. ammon. cit. (B.P. 30-60) 2 drachms.

It is these two preparations which I have learned to appreciate most highly. The subnitrate may be given either in cachet form, or suspended in a mixture. When prescribing it as a cachet I generally combine it with that excellent sedative, oxalate of cerium (whose B.P. dose of 2 grains is also ridiculously inadequate), thus:

℞. Bismuth subnit. ... ... gr. xxv.
Cerii oxalat. ... ... gr. x.
M. Sig.: Ter die post cib.

If, as is not infrequently the case, the patient has a gouty tendency, it is well to add 5 grains, or a little more, of pulv. guaiaci to each cachet, but it not infrequently happens that the 'little more' is found to produce griping, purging, or both. Another drug which might be added to such a cachet is bicarbonate of sodium. It increases the alkalinity, but it increases also the bulk of the cachet and the quantity of gas in the stomach.

Although the subnitrate is frequently prescribed in a mixture (20 grains of the salt to 20 grains of pulv.

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tragacanth. co.), it is not wise to do so. The carbonate acts nearly as well, and does not tend to decompose as the subnitrate does. On no account should the subnitrate be placed in a mixture with bicarbonate of sodium. The decomposition of the former leads to CO_2 being evolved from the latter, and explosions are apt to occur.

If it is desired to give bismuth in a fluid form, the liq. bismuth. ammon. cit. should be used. I am in the habit of combining it (as in the cachet) with a sedative—*i.e.*, hydrocyanic acid—thus:

℞. Liq. bismuth. ammon. cit. } ... ... āā ʒii.
Syr. pruni virg. }
Aquam ... ... ad ʒi.
Misce.

This makes an agreeable and palatable mixture; but if, with a view of correcting any gouty tendency, we add, say, ʒss. tr. guaiaci ammon., we must remember to suspend the latter in 40 grains of mucilage of acacia, and even then the mixture will be deprived of its elegance. There is no objection to adding bicarbonate of sodium to this combination, but there is really no necessity to do so, for it is already sufficiently alkaline.

Now, whichever form is decided upon, the cachet or the mixture, the important point to remember is that the proper time for its administration is some time after food. The length of time which should be allowed to elapse between the meal and the taking of the remedy depends, of course, upon the size of the meal. A full

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meal will take five hours to digest, and will use up a great deal of HCl. A light meal, especially if it be poor in proteids, will use up very little acid—that is why sthenic dyspepsia is so much more common after light meals—and the surplus will want neutralizing relatively soon. It will want neutralizing sooner after breakfast than after luncheon, and sooner after tea than either. After a full dinner the symptoms frequently do not show themselves until about 4 or 5 a.m., and may then, in addition to pyrosis and heartburn, take the far more obscure forms of hiccoughing, sneezing, asthmatic, and even anginal attacks. The presence of any symptoms, however little connected with the stomach they may at first sight appear, to recur regularly at 4 or 5 a.m. should give rise to a suspicion that dyspepsia is at the root of the mischief.

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It is probable that much of the success which has attended the practice of giving alkalies before meals has been due to the fact that the period immediately preceding one meal is the period which witnesses the close of the digestion of the last—the period, that is, in which there is surplus acid waiting to be neutralized. However that may be, there can be no doubt that the administration of alkalies, and especially of bismuth, at a suitable interval after food, offers a means of relief in sthenic cases which is practically unfailing, and I would go so far as to say that if relief is not obtained by such means, then the case is certainly not a dyspepsia of the class under consideration.

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A line of treatment suggested, or at any rate recommended, by Sir William Roberts is that of prescribing lozenges to be sucked by the patient as soon as the symptoms have developed. Lozenges have the advantage of portability, and the sucking of them insures that the superfluous acid in the stomach shall be neutralized by its physiological antidote, namely, saliva. It is curious to note that the saliva secreted during a sthenic dyspeptic attack is hyper-alkaline. It is as if Nature herself were suggesting the best means of curing the condition, for not only is the reaction enhanced, but the amount of the fluid is markedly increased in those attacks which the presence of pyrosis and coryza proclaim to be of more than usual severity.

The lozenge which Sir W. Roberts prefers is the trochis. bismuth. of the B.P., which contains 3½ grains of chalk and 2½ grains of carbonate of magnesia; but, true to his disbelief in bismuth, he suggests that this ingredient should be omitted. However, so long as the lozenge is not acid, it probably matters little of what it is composed. The efficacy of this line of treatment resides in the use which is very properly made of the alkaline saliva in neutralizing the offending acid. Even the mechanical irritation of a clean pebble carried in the mouth is useful in this direction, and patients should be told to remember it in the presence of an attack where no alkalies are at hand.

There is a point in prophylaxis which ought always to be brought to the notice of a sthenic dyspeptic.

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The source of the muriatic acid present in the gastric juice is believed to be common salt; patients should, therefore, be told to eschew salted meats, and be warned to relinquish the habit of adding chloride of sodium to their food. It is merely a habit, and few have any difficulty in relinquishing it. If the supply of the raw material is checked, the over-production of the manufactured article will cease.

And this consideration carries another lesson, which is this: The natural mineral waters which are so largely imported into this country have justly earned for themselves a great reputation in the treatment of chronic and occasional constipation. As nearly all these waters contain chloride of sodium, and some of them in very large quantities, it is inadvisable to recommend them to patients whose constipation is associated with sthenic dyspepsia. To relieve the difficulty in such cases recourse must be had to other means. Cascara is very serviceable, but I prefer either of the following, given three times daily before meals, followed by a glass of hot water:

℞.	Sodii sulphat.	... ...	gr. xxx.
	Sodii bicarb. ...	... ...	gr. x.
	Tr. nucis vom.	... ...	♏v.
	Ess. menth. pip.	... ...	♏ii.
	Inf. gent. co. ...	... ...	ad ℥i.
		M.	
℞.	Magnes. sulphat.	... ...	gr. xxx.
	Magnes. carb.	... ...	gr. x.
	Tr. nucis vom.	... ...	♏v.
	Ess. menth. pip.	... ...	♏ii.
	Inf. cascarillæ.	... ...	ad ℥i.

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Either of these mixtures takes the place of that containing sodium bicarbonate suggested above for 'lavage' of the stomach, and if persevered with, may be relied upon to dispose of the constipation.

Among those who suffer from sthenic dyspepsia, there are a very large number of people (mostly maiden ladies and widows) who are persuaded that they want 'supporting,' that their condition is due to debility, and that large and frequent meals are essential to their continued existence. Their miseries towards the end of digestion, and the prompt relief which is afforded by another meal, lend an amount of support to this view which no skill in the art of persuasion is in some cases sufficient to combat. If the real state of affairs is pointed out to them, they write the doctor down as an unsympathetic person, who is devoid both of perception and therapeutic instinct. Nevertheless, the attempt should always be made, for it is better to lose a patient than to share in the responsibility for the arterio-sclerosis and other serious manifestations which sooner or later provide a fitting Nemesis for these misguided people.

And this leads me to say that mistakes in differentiating between the two kinds of dyspepsia generally take the form of diagnosing as an asthenic case one which is in reality a sthenic case. Patients who pity themselves readily dwell upon the weakness which they feel, and, believing their symptoms to be due to debility, seek, by graphic and heartrending descriptions, to persuade the doctor to the same view.

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This is a pitfall against which it is very necessary that we should be on our guard. When there is any doubt about the nature of the case, it should be treated as if it was sthenic, by the exhibition of alkalies and sedatives. The reason for this is that alkalies and sedatives, though they may do an asthenic case no good, will certainly not aggravate the symptoms; whereas acids given to a sthenic dyspeptic immediately give rise to an acute exacerbation of all the troubles from which he was previously suffering.

There is one other point to remember in this connection, and that is the futility of treating sthenic dyspepsia by any remedies directed to the stomach alone until we are quite certain that the cause of all the trouble does not lie in the transverse colon. When we recall the anatomical relations of this portion of the large intestine to the great curvature of the stomach, it is not difficult to believe that an irritation which has its source in the one will be readily communicated to the other; and I have repeatedly found, clinically, that a dyspepsia of the sthenic type, which had resisted every combination of alkali and sedative, responded promptly to calomel and an enema properly administered.

Sir William Roberts divided the dyspepsia of substantially healthy people into the *atonic* form and the *irritative* or *acid* form, which is practically the same classification as that which is here advocated. Of the latter form he writes fully and instructively;

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but with the bias natural, perhaps, to one who has suffered much from one form, he dismisses the other, the atonic, in a few words as scarcely meriting the name of dyspepsia. From this view, and from the theory which would confine the term 'irritative' to either form, I must express my dissent. Atonic or asthenic dyspepsia—the dyspepsia, that is, whose essential condition is a deficiency of HCl in the gastric juice—is an exceedingly common condition, more especially among the working classes and among neurotic people of all classes; and the symptoms which such cases have in common with sthenic dyspepsia, the discomfort and the flatulence—albeit brought about in the one case by excess of acid and in the other by the presence of undigested food—are due to precisely the same condition, namely, an irritable state of the gastric mucosa.[1]

This element of irritation which the two forms have in common is important because failure to appreciate it seems to lie at the root of much of the confusion which prevails on the subject. Where the symptoms of the two forms seem to overlap, they do so on account of this factor and its results, and when this is clearly understood the difficulties disappear.

Let us now look at a typical case of **ASTHENIC DYSPEPSIA**, and consider how it should be treated. The causes which may produce the condition are

[1] I purposely refrain from any discussion of the fermentation theory, for even if there be any truth in this theory, which I doubt, it cannot affect the above considerations.

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numerous, and some of them are remote. Setting aside those which are obvious, such as convalescence from acute disease, it is well to remember that anything which gives rise to a constant leakage of nervous force is peculiarly liable to set up an asthenic dyspepsia. Such conditions as worry, uncongenial surroundings, nasal obstruction, and errors of refraction are among the most frequent, and it is safe to say that they are precisely those which are most commonly overlooked.

Let us, then, take as our type a married but childless woman of thirty, who is not exactly unhappy, but who has no definite object in life. She is lackadaisical rather than melancholy, with a dull complexion and spare frame. Her tongue is clean, but pale and flabby, and some of her teeth are defective. She complains of a dull pain in the chest, which passes through to the back. The pain is always more or less present, but every meal, no matter whether it be large or small, intensifies it. She has very little appetite as a rule; though occasionally, when she forces herself to eat, it seems to improve after she has taken a few mouthfuls. She suffers from flatulence and palpitation, and is generally very constipated. Medicines may relieve the constipation, but they generally leave the discomfort and the flatulence unaffected. On examining her abdomen, we may find a movable kidney on the right side, and the muscles in the anterior abdominal wall will be found to be badly developed. She takes very

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little exercise, and protests that she never feels up to it.

The treatment of such a case is not difficult. Having freed the primæ viæ and attended to the other details already mentioned as suitable to both forms of the malady, we turn to the measures of active treatment. Having regard to what we know to be the essential condition in this case—namely, deficiency of HCl in the gastric juice—the first indication is, clearly, to supply the deficiency. And in doing so we must be careful to give doses large enough to effect our purpose. The ordinary B.P. dose of ♏x. is altogether inadequate; the minimum dose which I employ is ♏xxv. This it is well to combine with strychnia and pepsin, as in the following:

℞. Acid. mur. dil.... ... ... ♏xxv.
Liq. strychnin. ... ... ♏v.
Glyc. pepsin. ... ... ℥i.
Aq. menth. pip. ... ... ad ℥ss.
M. Sig.: Thrice daily immediately after food.

To such a mixture may be added other drugs which the nature of the case may seem to demand. Quinine hydrochlorate, liq. ferri mur., liq. morph. mur., and liq. arsen. hydrochlor., are all of them preparations which are frequently of great assistance in such cases, and all of them are quite compatible, not only with each other, but also with the other ingredients in the mixture. The most useful of them is perhaps the morphia salt. In cases of long

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standing, where the element of irritation is consequently very pronounced, the addition of ♏x. of the liq. morph. hydrochlor. is invaluable. It soothes the mucosa and enables it to tolerate the stimulating effects of the HCl and strychnine, which in its absence are liable to cause so much local disturbance as to bring the patient back with the complaint that each dose of the medicine aggravates her sufferings. It is scarcely necessary to dwell upon the great importance of deleting this ingredient from the prescription as soon as there is any prospect of doing so with impunity.

For the constipation, which is generally so prominent a feature in asthenic dyspepsia, the use of the natural mineral waters is not only unobjectionable—it is strongly indicated. The presence in them of common salt, which we have seen to be a contra-indication in sthenic dyspepsia, is here an advantage. Most of these waters are best taken in the morning (fasting), and their effect is enhanced by the association with each dose of a tumblerful of hot water.

Such are the broad lines on which all cases of functional dyspepsia should be diagnosed and treated. Mistakes in classification, and consequently in treatment, are more easily made than the facts as above stated might lead one to believe; but this, at any rate, I have no hesitation in saying: that if a dyspepsia, carefully considered and sympathetically treated, does not yield to either of the lines of treat-

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ment above indicated, then the original assumption of the absence of a structural basis was incorrect. The structural basis, which is most difficult of diagnosis, and is therefore the most fruitful cause of such misapprehensions, is presented by the existence of adhesions between the stomach and neighbouring organs. Where there is good reason to believe that such adhesions are present, the aid of the surgeon must be invoked, and I know of no condition in which his interference is productive of more brilliant results.

There is a condition which some, at any rate, of the manifestations of sthenic dyspepsia are liable very closely to simulate, and to which it therefore seems desirable briefly to refer — namely, *angina pectoris*. Where sthenic dyspepsia is associated, as it not infrequently is, with some degree of gastric dilatation, symptoms resembling true angina are by no means uncommon. I have already referred to the fact that attacks of sneezing, dyspnœa, and the like, are in these cases very liable to occur in the early hours of the morning, and I have pointed out that these attacks are due to the irritation produced primarily by the excess of acid present at the end of digestion.

Now, it is not difficult to understand how the consequent flatulent distension of a somewhat dilated stomach will cause serious mechanical embarrassment to the heart, nor that, as a result, symptoms should ensue which are very suggestive of true angina. Add

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to this the fact that the patient frequently brings a history of pain in the chest, evoked by exertion, which radiates down the arms, and the suspicion of angina is necessarily deepened. It is important to remember, therefore, that all these symptoms are entirely compatible with functional gastric disturbance; and to prevent unnecessary alarm to the patient and his friends, it is well to avoid all mention of the more serious condition until the less serious can be excluded.

There are some facts which may aid us in arriving at a conclusion upon this point, which is liable to present difficulties not only because of the general resemblance between the symptoms, but also because an attack of flatulence may be the starting-point of the first of a series of true anginal seizures. In the first place, then, it may be said that the constant presence of palpitation in association with the attacks is against the suspicion of angina and in favour of simple dyspepsia. In favour of dyspepsia, also, is the regular occurrence of the attacks in the early hours of the morning. When inquiry elicits that the pain on exertion occurs always after a meal and never when the stomach is empty, the fear of angina may be allowed to recede, and it may be dismissed altogether if an antacid taken at a suitable interval after meals is successful in preventing the attacks.

The occurrence of such symptoms, however, even when they are quite definitely dyspeptic in origin,

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should not be too lightly regarded. They are often associated with giddiness and other phenomena which occasion alarm to patients, and if the cardio-vascular condition be carefully examined, as it should always be, it is very seldom found to be in an entirely satisfactory condition. Setting aside the heart itself, whose state, when it is affected at all, is variable, and is always secondary to the changes which are present in the arterioles and capillaries, it is necessary to examine carefully into the state of the arteries. These will generally — one may say always—be found in a state of high tension, and the treatment of the dyspepsia by means of antacids will be only temporarily successful unless means be adopted to insure that the intravascular pressure be permanently reduced. In order to reduce this pressure it is necessary to realize the nature of its cause. In nine cases out of ten this is the presence of toxins circulating in the blood. The toxins, by irritating the vessel walls, cause constriction of the muscular coats, and blood-pressure is at once increased. The real nature of the toxins which may give rise to this state of matters is not yet understood; but in the cases under consideration—those, namely, of sthenic dyspepsia—they are generally, if not invariably, the result of excessive meat-eating.

The first thing to do, then, is to impress upon the patient the necessity for abstention from meat foods; and the older the patient, and the more sedentary his mode of life, the more urgent does this necessity

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become. A general reduction of intake, in quantity as well as quality, is usually very desirable, and, in my experience, the meal which may be attacked with the best prospect of success is that which is taken at or about midday. This should consist of milk, eggs, cheese, fruit, and vegetables—of anything, in fact, which has not been killed—and it should be free from alcohol. So far as the meat at the evening meal is concerned, it is well to insist that it should be boiled, because it has been shown that boiled meats are much less liable to increase arterial tension than those which are otherwise treated.

To insure the adequate excretion of such toxins as may already be present, the bowels, skin, and kidneys must be stimulated. Mercury is the best agent to employ for the first of these purposes. About a grain of calomel should be given every night for a week, followed each morning by a saline, and the saline should be continued for at least a week longer. Turkish and hot-air baths are useful for cutaneous stimulation, especially where they are combined with or followed by efficient massage. Even the ordinary hot bath, properly administered, is by no means without its value in this connection. For the stimulation of the kidneys the salts of potassium are to be preferred, and of these the iodide and the citrate are the best. Ten grains of the citrate with 5 grains of the iodide should be added to the mixture of bismuth above prescribed, and the patient should be directed to drink freely of Evian water between

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meals. Another excellent renal evacuant is theobromine.

The importance of these measures resides in the fact that a sthenic dyspepsia which is accompanied by high arterial tension is but a symptom of an underlying condition whose continuance is fraught with the utmost gravity to the patient. There is, as a rule, no difficulty in curing the dyspepsia; but if we allow ourselves to rest satisfied with such an achievement, and shut our eyes to the possibilities of dangers ahead—dangers such as granular kidney and general arteriosclerosis, which are two among many of the logical issues of sustained high arterial tension—the patient will have good cause to regret the promptitude and completeness of the relief from his dyspepsia which he has obtained at our hands. This is the condition to which the term 'gouty dyspepsia' has been applied, and if we use the term to denote a dyspepsia of the sthenic type, which is merely a manifestation of a general condition of goutiness, which general condition demands our attention even more urgently than the dyspepsia, then the term is altogether unobjectionable. There is, however, very little advantage to be gained from the multiplication of adjectives.

There are two symptoms commonly associated with dyspepsia which, from the discomfort they may cause, it is often necessary to treat during the interval which may have to elapse before their cause can be removed: the one is flatulence, the other is hiccough.

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FLATULENCE may be either gastric or intestinal. The former is said to be due to fermentation in the stomach itself. Although there is good reason to believe that this is not the case, there is no doubt that the symptom is one which is nearly always present in every case of gastric derangement, from whatever cause arising. It may, on the other hand, be a pure neurosis, and is frequently provoked by worry and anxiety. In neurotic subjects and in mouth-breathers (as in the subjects of adenoids and deviations of the nasal septum) it is due to the swallowing of air. When this symptom is so obtrusive as to demand treatment apart from its underlying cause, there are three remedies which can usually be trusted.

To those who believe in the fermentation theory, carbolic acid, 2 grains, made into a pill with 1 grain each of liquorice powder and powdered althea, and given three times daily, will probably appeal, and it certainly is often very helpful. In the form of sulphocarbolate of sodium (10 to 15 grains) the same remedy may be added to mixtures prescribed for the relief of the complaint which causes the flatulence. The sodium salt sometimes acts better than the pure acid.

An old and very reliable remedy is charcoal. This should be given in doses of at least a drachm three times daily. The drug which has seemed to me to be most trustworthy, however, is terebene: 10 or 15 drops may be put upon a lump of sugar for

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the patient to suck, or the same quantity may be given in a capsule three or four times a day. Whether by checking fermentation or by some other action, it is certain that few remedies possess so much power in relieving the distressing eructations to which some dyspeptics are liable.

Where the flatulence is intestinal, the treatment should be directed towards increasing peristalsis by means of nux vomica and belladonna. The condition is generally associated with atony, and care should be taken not to administer drugs, such as magnesium sulphate, which increase the fluid contents of the bowel without increasing peristalsis, unless the muscular action is simultaneously reinforced either by drugs or massage.

Of all the remedies directed to the relief of this condition, nothing has seemed to me to compare with oil of cajuput. It should be given in doses of 2 minims, and may be combined in a pill with extract of gentian, or, when dissolved in a few drops of spirit, it can be added to any mixture. In the flatulence which is so liable to develop after operations in the neighbourhood of the rectum this remedy is invaluable.

HICCOUGH is due to a sudden more or less violent contraction of the diaphragm, and may be produced by irritation, either in the immediate vicinity of the muscle or reflexly from a distance. An attack may last for a few minutes only or it may be protracted over several hours, and it may recur at intervals for

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weeks, or even months. It is a common symptom of dyspepsia, more especially of sthenic dyspepsia; but it may also be due to organic affections of the stomach and intestines, such as carcinoma, and to hepatic disease, or appendicitis. It is a frequent accompaniment of the tympanites of typhoid fever. It may be excited reflexly by organic disease of the nervous system, such as meningitis, hydrocephalus, and intracranial tumours. In functional diseases it is common; hysteria, sudden shocks, and acute emotions providing a great many instances. It is not altogether unknown in epilepsy, and may occur in chorea. Certain constitutional conditions, especially gout, diabetes, gouty nephritis, and alcoholism seem to create a strong predisposition to its development. So much is this the case that the absence of other obvious cause should lead one to suspect the operation of such an agent.

Hiccough is very often associated with pregnancy, and it may complicate Graves' disease or Addison's disease. When it appears in a person who is seriously ill, especially if it becomes persistent, it is a sign of evil omen, and should lead us to be very guarded in prognosis. Its most obvious mechanical cause is pressure on the phrenic nerve within the thorax, a condition which is most likely to be produced by dilatation of the aorta, pericarditis, or new growths.

Persistent hiccough, from whatever cause arising, is very distressing, not only to the patient, but to those

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around him, and it is necessary to allay it as soon as possible. Various means to this end have been suggested from time to time, including medicines to be taken by the mouth and applications of a stimulating nature to the epigastrium. Of the latter, warmth and small mustard-plasters are occasionally useful, and skilfully applied massage is frequently so. Of internal remedies, the best seems to be nitro-glycerine in doses of $\frac{1}{100}$ of a grain upwards. It seems to act better when given in tablets than in the form of liq. trinitrini (2-5 minims), though I have used the latter with success. In either case the dose should be small and frequently repeated. Oil of turpentine is highly recommended by some. It should be given in doses of 10 minims mixed with mist. amygdal.

Ext. ergot. liquid. in drachm doses, frequently repeated, has been very successful in some cases, and is always worth a trial where other things fail. It is generally conceded that morphia, chloral, bromide of potassium, and even the inhalation of chloroform, are useless. Ether by the mouth, however, sometimes proves effectual. Traction on the tongue will sometimes produce the desired effect. Forcible holding of the breath in deep expiration is useful in slight cases, as is drinking a glass of water with both ears and nostrils closed. Of all these means, however, nitro-glycerine is the most likely to be successful.

Musk (5 to 10 grains) in a pill with liquorice may also be tried. It is well spoken of by many, the only objection to its use being its great expense.

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ADDITIONAL FORMULÆ.

Byron Bramwell ('Clinical Studies,' vol. ii., part i., October, 1903) gives the following.

Alkaline Mixture.

℞. Potass. bicarb. } ... ... āā ʒiii.
Sodii bicarb. }
Spts. ammon. co. ... ... ʒiv.
Tr. rhei ... ... ʒii.
Inf. calumbæ ... ... ad ℥vi.

M. Sig.: ℥ss. in water, thrice daily, a quarter of an hour before food.

Mixture for Flatulence.

℞. Menthol ... ... gr. ¼
Spts. ammon. co. } ... ... āā ʒi.
Spts. chlorof. }

M. Sig.: One teaspoonful in water when required.

Alkaline Cachet.

℞. Potass. bicarb. ... ... gr. xv.
Sodii bicarb. ... ... gr. xv.
Pulv. rhei ... ... gr. ii.

M. Ft. pulv. in cachet i. Sig.: Three times daily a quarter of an hour before food.

Alkaline Cachet, where there is Constipation (Huchard).

℞. Sodii bicarb. ... ... gr. x.
Magnes. oxid. ... ... gr. x.
Bismuth. subnit. ... ... gr. x.

M. Sig.: One three times daily.

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Alkaline Cachet (Huchard).

℞. Sodii bicarb.
Sodii phosphat. } ... ... āā gr. x.
Cret. prepar.

For Flatulence (Robin).

℞. Fluoride of ammonium ... ... gr. ii.
Distilled water ... ... ad ℥i.
M. Sig.: One teaspoonful for a dose.

For Flatulence (Einhorn).

℞. Resorcin ... ... gr. iv.
Bismuth. subnit. ... ... ℥i.
Aquam ... ... ad ℥viii.
M. Sig.: Ex ℥i aq. ter die half an hour before food.

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CHAPTER III.

CONSTIPATION, DIARRHŒA, VOMITING, AND GIDDINESS.

CONSTIPATION may be described as inadequate discharge of the contents of the lower bowel; a definition which assumes, of course, that there is material in the lower bowel which is improperly retained. This is a fact which seems to require emphasizing, for the reason that the term constipation is often made to include infrequent defæcation in people with whom such infrequency is habitual and normal. It is well to remember that the amount of fæces represents the excess of material consumed over what it is possible for the economy to utilize, and that consequently, if people took no more food than was necessary to their continued existence, the amount of fæces would be practically nil. There are persons—not very forceful persons perhaps, but still perfectly healthy persons—who are very spare eaters, and who are, in addition, very careful eaters, in the sense that their food is thoroughly masticated, whose bowels do not act more than once a week. If we were to gauge the matter only by the standard of the practice of the

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vast majority, this would seem absurdly and even dangerously inadequate, and yet the infrequency of the discharge in such cases, as being in consonance with the small amount of intake, must be regarded as natural to the physiological working of the individual, and, as such, not lightly to be interfered with. These people are, however, not ordinary people, and though it is wise to remember not only their existence, but also the physiological lesson of which they present living examples, it would be foolish to accept them as a standard by which to measure the practice of the majority.

The ordinary individual does not regard his diet from the standpoint of mere existence; he likes a balance on the right side, and is consequently in the habit of eating more, both in quality and quantity, than his system can possibly make use of. The excess in quality supplies him with a stimulant which he enjoys, which, indeed, he may even find necessary to the accomplishment of his daily work; the excess in quantity is a mere accident, as it were, a concomitant of the excess in quality, which he takes because it is part and parcel of the things he likes. This excess in quantity consists of what has been called ballast—material, that is, which he cannot digest, because it is indigestible by nature, material such as vegetable fibre and other constituents of food over which the digestive ferments exercise no dissolving influence. It is of the excess in quantity thus constituted that the fæces are for the most part

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composed. Some of the excess in quality—a portion that is, of the material which is by nature digestible—also enters into their composition, especially when that excess is very conspicuous; but the discharged matter, as a rule, consists of material which has escaped digestion, not because the digestive organs are at fault, but because the material itself is insusceptible of solution and conversion into chyle. It is the inadequate discharge of this material which constitutes the condition which we are now considering.

It will be convenient to spend a moment in tracing the course of the excess in quality, and to inquire what becomes of the soluble material which is consumed, even though it is not wanted and cannot be utilized. Some of it doubtless becomes entangled in the indigestible residue, and under favourable conditions is harmlessly discharged. The greater portion, however, is metabolized and ultimately finds its way into the blood. Nature's processes being essentially thrifty, the excess is not immediately thrown away; it is stored for use on a rainy day, as it were, and is deposited as adipose tissue in various parts of the body. There is reason to believe that the process of this manufacture of fat, at any rate after a certain quantity has been deposited, is attended by by-products which exercise a very deleterious influence on the economy, and give rise to gouty, rheumatic, and kindred manifestations. The bearing of this upon the subject of constipation is this: that not only the original excess itself, but

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also the by-products, have infinitely less chance of escape if the fæces are unduly retained.

Constipation may be either occasional or habitual. The former is seldom important, except in so far as it tends to lead to the latter, and this it does more often on account of its injudicious treatment than for any reason inherent in the condition itself. From the fact that there are so many remedies for it on the market, which are always given an extended trial before recourse is had to medical advice, occasional constipation is a matter about which a doctor is not often consulted. He may, however, be consulted about conditions which are directly due to a loaded rectum, though the cause is unsuspected by the patient. Diarrhœa is one of these, hæmorrhoids is another; but perhaps the most common are undefined digestive disturbances. It is also well to remember that a loaded rectum may be the determining cause of an asthmatic attack, a hysterical fit, an epileptic seizure, or of some even more obscure reflex manifestation, and that the nervous instability which these things denote will remain obdurate to treatment unless the simple, but easily overlooked, cause be removed.

Three remedies stand pre-eminent in the treatment of occasional constipation of this sort, and with regard to them, it is well to state at once, that their use in habitual constipation is as futile and injurious as their employment in occasional constipation is desirable and successful. The first is castor

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oil, the second calomel, and the third a soap-and-water enema. Castor oil is a simple aperient, which generally acts without griping and may safely be given to people of all ages. The great drawback to its use is its nauseous taste, to overcome which various so-called tasteless oils have been placed on the market. With regard to these, it must be remembered that, to be efficacious, very much larger doses are necessary than in the case of the ordinary oil, and that none of them is quite tasteless. In order to avoid the taste, in so far as it is possible to do so, the dose of the ordinary oil should be given in milk, with which the rim of the glass has previously been wetted. If in the drinking care is exercised not to allow the oil to come into contact with the teeth—if, that is to say, the dose is 'tossed off'—the unpleasant taste is slight and transitory. Ringer says that a mixture consisting of castor oil, ½ ounce; fresh mucilage of acacia, 3 drachms; distilled water, 5 drachms; with, say, 3 drops of oil of peppermint, has very little taste.

Calomel is rightly considered the best purgative we possess, mainly because, in addition to being a purgative, it is an intestinal antiseptic of the highest value. The mistake which is commonly made in connection with it is that of giving it in large doses—*i.e.*, 2–5 grains. It effects its purpose much more satisfactorily if given in quite small doses, say ⅛ or ¼ grain, repeated every four hours until the bowels act. In this way it remains much longer in the

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intestinal canal, and its antiseptic properties have therefore an opportunity of exercising their beneficent effects. The importance of these properties in the treatment of occasional constipation does not seem to be realized; people appear to imagine that purgation is of itself an antiseptic measure. Such it may be, but very often it is the reverse. Fæces which remain a long time in contact with the colon become quiescent, but as soon as they are disturbed by a purgative their toxins are set free, and unless the purgative contains the means of counteracting the effect of these toxins, it may do a great deal of harm. Calomel being the most reliable of all intestinal antiseptics, and a hepatic stimulant to boot, it is infinitely the best agent for occasional purgation. As a rule, it is advisable to follow an evening dose of calomel with a morning dose of aperient water.

Where it is desired to wash out the lower bowel without unduly stimulating the small intestine, or where the object is to hasten the action of a purgative given by the mouth, a soap-and-water enema is an excellent measure. For reasons just referred to, however, it is always well to add an antiseptic to the enema, and one of the best for this purpose is oil of eucalyptus, 4 or 5 drops of which should be well agitated with the soap and water before administration.

There is one practical point in the giving of an enema to which I should like to direct attention. Everyone knows that the fluid should be about

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100° F., and everyone is aware that the success of the operation depends upon its being performed very slowly; but very few seem to realize either that the nozzle of the ordinary syringe is about the worst that could have been devised for its purpose, or that a very efficient substitute is very readily obtainable. The ordinary nozzle is too short, so that, in order to prevent the regurgitation of fluid, the disc which separates the nozzle from the tube has to be firmly pressed against the anus, a process which may give rise to considerable pain. This nozzle should, therefore, be removed, and an ordinary No. 12 gum-elastic male catheter be put in its place. The bone rim at the end of the catheter is almost an exact fit for the rubber of the syringe, and will retain its place without wire or cord. The catheter thus attached, when warmed and oiled, makes an admirable nozzle. It is introduced without pain, it reaches well up to the sigmoid flexure, and, if the patient's pelvis is elevated, as it should be, the fluid shows no tendency to regurgitate.

So much, then, for occasional constipation. We now pass to the consideration of the far more important subject of habitual constipation. Of this condition I would like to affirm at the outset that it is in the vast majority of people a malady which is eminently and easily curable, provided that it has not been long enough in existence to cause gross alteration in the anatomical relations of the parts, and the persistence of this alteration by the forma-

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tion of adhesions. It is not, as a rule, until the age of fifty is reached that chronic constipation becomes incurable by medicinal means. And, although it is one of the commonest and most curable of maladies, it is, unfortunately, true that it is the one that is least often cured; that it is allowed to remain one of the chief scourges of our present civilization, vieing even with alcohol and syphilis in the multiplicity of its consequences and their magnitude. That it can be made to rank with the two latter is due to the fact that, like them, it supplies a toxin to the blood, which, while producing its effects in all directions, seems to have a special predilection for the central nervous system. For chronic constipation means chronic poisoning, and this form of chronic poisoning is a more direct and potent cause of nervous instability, whether manifested as hysteria, neurasthenia, or definite mental derangement, than any other.

In connection with the subject of causation, it is desirable to bear in mind some contributing causes and two essential factors. With regard to the former, we may derive some instruction from considering the sex-incidence, not only of the malady itself, but also of the above-mentioned consequences. I have no statistics to guide me, but a rough estimate suggests that this incidence is about 4 to 1, if not more, in favour of women. This being so, we naturally look to those conditions which are associated with the female sex to throw some light upon the causes of

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constipation. Such conditions are tight-lacing, pregnancy, and muscular inactivity; and these are very generally accompanied by a certain tendency to disregard the calls of Nature, due to modesty or lack of suitable opportunity.

Muscular inactivity, though not in the sense in which that term is generally used, is a very common cause even in men. As we shall see presently, general muscular activity, so far from preventing constipation, may favour its occurrence, especially if insufficient fluids are consumed; it is the muscular activity local to the abdominal organs which is so important in this connection. This is almost invariably on the minus side in the vast majority of those who are habitually constipated, and no treatment is likely to avail unless this defect is remedied.[1] A disregard of the calls of Nature is also common in some men—in those, for example, upon whom business exigencies impose irregularity of hours. This is a matter which ought always to be inquired into, and the importance of daily soliciting relief at the same hour should be emphasized.

It is also worth while pointing out to patients that the sitting posture assumed by civilized man during the act of defæcation is far less calculated to aid in the accomplishment of the act than the crouching attitude of primeval or agricultural man. By the aid of a footstool the latter position may be imitated with some approach to accuracy, and its adoption

[1] See p. 268.

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will not infrequently turn the scale in favour of the accomplishment.

Having regard to the fact that the fæces represent the indigestible residue of the food, it has been assumed that the absence from the food of a certain proportion of those articles of diet which contain a large amount of this residue is a cause of habitual constipation. This is only true when taken in conjunction with the other facts which have just been alluded to—namely, that a small residue, as being normal in small feeders, does not constitute constipation, and that the condition may own causes which are altogether independent of dietetic considerations.

The addition, therefore, of such articles as oatmeal, brown bread, figs, prunes, and the like, to the diet of a costive person, though it may prove of temporary service in certain cases, is not only unlikely to effect permanent improvement in chronic constipation, but in bad cases, by increasing the quantity of material in the already overfilled and sluggish colon, it is liable to do a great deal of harm. The amount of undischarged matter is augmented, and the toxins are supplied in greater abundance. These articles of diet, when they act at all, do so by mechanical stimulation of the intestinal mucosa; and if the mucosa is insensitive to slight stimulation, as in all cases of the real malady it invariably is, their ingestion can have but one result—that, namely, of filling up the intestinal cesspool. These articles are useful in the slight occasional costiveness of other-

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wise healthy people; in the treatment of real chronic constipation they are worse than useless.

The foregoing are contributing causes; we have now to consider the exciting causes. These are two in number—namely, deficiency of fluid and inadequate peristalsis. The most important factor in the causation of chronic constipation is undoubtedly a deficiency of fluid in the gastro-intestinal canal. This factor is operative even in occasional constipation—such, for example, as that which follows active exercise, or arises in connection with bracing conditions of the atmosphere. During active exercise a great deal of moisture is discharged through the skin, in bracing climates a great deal is passed through the lungs, with the consequence in both cases that less than the customary amount is present in the intestines, and constipation ensues. Anything, in fact, which withdraws more than the usual quantity of water from the system will cause this factor to become operative.

In many people, however, who suffer from chronic constipation the meaning of the deficiency of fluid is difficult to explain. It may be due to inadequacy of intake, or to excess of output, as in diabetes and hysteria, but in many cases the fault is hard to find. We are justified, I suppose, in assuming that, as some people have preternaturally dry skins, so others may have preternaturally dry intestines, which for their adequate working seem to require an amount of fluid which to the ordinary person would appear excessive.

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Such an assumption seems necessary to account for many of the cases which come before us in people whose diet and general mode of life appears to be no different from that of their neighbours. Those cases in which the vaseline treatment[1] is successful belong to this category.

The second factor, which is of almost equal importance with want of moisture in the causation of the condition, is diminished peristalsis, due to atony or simple inertia of the muscular walls of the intestines. This is common in people with flaccid abdomens, in those who tight-lace, and those who take no exercise. It is present in convalescence, in anæmia, and other debilitated states. In its most pronounced form it may be seen in paralytic states arising from lesions in the cord; and from the obstinacy of the constipation which attends such lesions it is possible to gauge the supreme importance of adequate muscular contraction in the mechanism of normal defæcation.

Where both these factors are in operation at the same time we have the ideal conditions for the production of constipation, and unless these factors are overcome by rational means, the condition speedily becomes chronic. There are, unfortunately, many altogether irrational means which are occasionally adopted to this end, conspicuous among which are occasional and drastic purgation and the habitual employment of enemata. Such means are, however,

[1] See p. 92.

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very generally condemned; they need not therefore detain us.

The symptoms and physical signs of chronic constipation are liable to be very obscure. The patient himself is frequently not aware that he is the subject of the condition, being lulled into a false sense of security by a small daily evacuation. This daily evacuation represents the overflow of the intestinal cesspool, comparable in every way to the overflow which is of such evil omen in retention of urine, and, in common with the latter, it suggests the need for immediate and active interference. The symptoms which we may expect in such a case vary within very wide limits, and their number and intensity will depend largely upon the duration of the condition. When we remember that the effect of chronic constipation is to supply toxins to the blood, which may select for their maleficent activities any portion of the body, we need not be surprised either that these manifestations are seldom the same in two cases, or that they should be so indefinite as frequently to escape being assigned to their real cause.

Of symptoms, digestive disturbances are the most frequent, and the usual complaints under this head, such as flatulence, dyspnœa, and palpitation, are often accompanied by inability to keep awake. Pains in the back are common, and obtrusive sensations in the genitals are often admitted. Vomiting sometimes occurs, and giddiness, especially on stooping, is a frequent symptom. Irritability of temper is some-

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times a marked feature, but an abnormal apathy, amounting occasionally to melancholia, is not uncommon. In children the psychical disturbances may take the form of night terrors. These night terrors, though usually ascribed to some grave cause such as meningitis, are almost always due to dyspepsia or constipation, or both; and I may say here that their proper treatment consists in the exhibition, not of chloral and the bromine salts, but of calomel and the salts of magnesium. In children and adolescents an erratic temperature is very suggestive of gastro-intestinal disturbance, and this will often prove to be due to chronic constipation. Ignorance of this fact, coupled with recollection of the aphorism that an otherwise inexplicable temperature is due to typhoid, has often caused a great deal of unnecessary alarm to parents. Intestinal worms are a very frequent accompaniment of chronic constipation, and, contrary to the generally accepted belief, they are the result, and not the cause, of the condition.

To the careful observer the appearance of the skin of the chronically constipated is very suggestive. It is muddy and sallow even in those of blonde complexion, with dark rings round the eyes and areas of pigmentation scattered irregularly. The absence of a due amount of subcutaneous fat, which gives the patients an emaciated and prematurely aged appearance, is very suggestive, especially if the cutaneous secretions have an unduly pungent odour. Examination of such a patient may prove negative, a foul

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tongue and offensive breath constituting all the objective signs. Careful palpation of the abdomen will, however, in most cases reveal the true state of affairs. The walls being lax, it is generally easy to make out the hardened colon, which the weight of its contents has not infrequently displaced. Short of this, it is very common to come across a diffuse mass either at the hepatic or splenic flexure, caused by the matting together of the intestines by adhesions.

A mistake which is very often made is that of confusing a fæcal mass in the ascending colon with an unduly mobile right kidney, and it is a wise rule which bids us beware of a diagnosis of the latter until the bowels have been thoroughly opened. The stools in a bad case of chronic constipation are dry, pale in colour, and mortar-like in consistence, and the urine is very much increased. In slighter cases, however, the motions may seem to be normal, except for their large calibre and exceeding dryness.

The two main factors in the causation of chronic constipation being deficiency of fluid and inadequate peristalsis, our therapeutic efforts must necessarily be directed to surmounting these. But in our endeavours to surmount them we must not lose sight of the fact that the condition we are attacking is a chronic condition, and that, in the words of Trousseau, chronic diseases require chronic remedies. It is therefore necessary to sketch out a definite plan of campaign,

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and to enlist the patient's co-operation, explaining to him that the siege may last several, if not many, weeks. To attempt to treat the condition fitfully or spasmodically, or to consent to be a party to its fitful or spasmodic treatment, is to court certain disaster. And herein lies one of the great advantages of the spa treatment of these conditions. The patient goes to the spa with the intention of submitting himself, for a period of six weeks or so, to such details as may be imposed upon him, and he becomes at once a willing coadjutor in the process of his own salvation, instead, as he too often is at home, of remaining an unwilling and half-sceptical passive resister.

Provided that the spa be well chosen and the physician at the spa be well selected, there is no method more likely to be successful in a case of chronic constipation than properly supervised mineral-water treatment. We need not stop to inquire which of the elements in this treatment it is which does the good—whether it is the increased ingestion of the fluid itself, or the saline constituents, or the concomitants, in the shape of massage, electricity, and exercise, or whether radio-activity plays any part in the result, because I believe such questions to be academic only.

What we do well to recognise is that courses of water at Carlsbad, Vichy, Homburg, Baden-Baden, Brides-les-Bains, St. Gervais, and many other health resorts, offer, as the result of a combination of all these

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elements, a method of cure which, when properly supervised, is superior to any other. And, before leaving this subject, I should like to say that the best patients for treatment at these places are, as a rule, precisely those who are never sent there—from this country, at any rate—namely, children. In them, because of their vigorous recuperative powers, chronic constipation is very easily and very promptly relieved, and the excellent dietetic and general hygienic rules which they are invariably taught at such places insures, in so far as anything can insure it, that their relief shall be permanent.

The success which generally attends the spa treatment of chronic constipation suggests that the principles which are practised at health resorts, if they could be carried out at home, would bring about results equally satisfactory. Now, these principles can, to a very large extent, be so carried out, and their application on the following lines will almost invariably be found successful. The active ingredient in most of the natural mineral waters which act as laxatives is sulphate of magnesium. This, when combined with carbonate of magnesium, and (with a purpose which will presently appear) some tincture of nux vomica, constitutes a very efficient laxative. For antiseptic and gustatory reasons it is well to include essence of peppermint, and to reinforce the first two ingredients, the infusion either of senna or of gentian should be added. Our prescription therefore runs thus:

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℞.	Mag. sulph.	gr. xxx.
	Mag. carb.	gr. x.
	Tr. nucis vom.	♏iv.
	Ess. menth. pip.	♏ii.-v.
	Inf. sennæ vel gent. co.	ad ℥i.

M. Sig.: To be taken three times daily half an hour before food, followed by a tumblerful of hot water.

That is the prescription for the robust, the Carlsbad or Vichy type of invalid, for the man who requires alkalies as well as purgatives. But all patients do not belong to this class, and for them this mixture will be found very depressing. There are a good many people who require acids rather than alkalies, whom one would send to Kissingen or Brides rather than to Carlsbad or Vichy, and for them our prescription must undergo some modification—thus:

℞.	Mag. sulph.	gr. xxx.
	Acid. sulp. dil.	♏i.-ii.
	Liq. strychnin.	♏v.
	Ess. menth. pip.	♏ii.-v.
	Inf. sennæ or gent. co.	ad ℥i.

M. Sig.: Three times daily after food, followed by a tumblerful of water.

To this may be added quinine or iron or arsenic, or any other tonic which the patient seems to require. Whichever of these prescriptions be used, the main point to remember in connection with it is that the natural mineral-water principle of small doses, largely diluted and frequently repeated, should always as far as possible be imitated.

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Having constructed these prescriptions, let us see how they conform to the theoretical requirements of the case: how far, that is, they are calculated to overcome the two main factors in the causation of the condition—namely, deficient moisture and inadequate peristalsis. It is known that magnesium sulphate acts by increasing the watery contents of the intestine, and it is believed to bring about this result by (1) inhibiting the absorption of fluid from the gut, and (2) owing to its osmotic power, by drawing fluid from the intestinal wall. It therefore not only softens the fæces, but it also prevents the absorption of the toxins.

The increase of intestinal fluid is further aided by that free dilution to the necessity for which I have already referred. But magnesium sulphate, with its consequent increased fluidity of the intestinal contents, is in most cases useless unless we provide for the expulsion of those contents by adequate peristalsis, and this is effected by the addition in the one prescription of nux vomica and in the other of strychnine; and in both, where necessary, by the substitution of the infusion of senna for the infuson of gentian. It is forgetfulness of this fact—namely, that magnesium sulphate does not in any degree aid the expulsive mechanism—which has given rise to so much disappointment in the use of ordinary mist. alb. (mag. sulph., 1 drachm; mag. carb., 10 grains; aq. menth. pip., ad 1 ounce). People complain that it causes flatulence and griping and fails to effect its purpose. This it would not do

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if the prescribers would remember to add a sufficient quantity of nux vomica to insure proper contraction of the muscular fibres. And here, too, is the secret of the failure of spa treatment in this condition. Because such treatment does fail—it fails absurdly often; and when it does, it is because the local physician's estimate of the virtues of his own waters refuses to include a realization of their limitations, and he administers the waters without supplementing them with an agent which, like nux vomica, electricity or massage, is calculated to induce that adequate peristalsis without which every effort is necessarily futile.

Senna is a remedy which I have found to be of the greatest utility. This is a drug which seems to be in danger of being forgotten, and yet it is most serviceable. It aids the magnesia in increasing the fluidity of the contents of the bowel, and assists the nux vomica in procuring their expulsion. An expedient of Lionel Beale's is one which I have found immensely helpful in the management of chronic constipation in spoilt children. He says:

'Suggest that a teaspoonful of senna-leaves be tied up in a muslin bag and soaked for an hour in the water in which a pound of prunes is stewed. In this way you add a little infusion of senna to the prunes, and, although you hardly alter their taste, you considerably increase their purgative action. The inf. gent. co. of the older pharmacopœias used to contain senna, but that is now changed.'

Of course, it is open to anyone who wishes to substi-

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tute sulphate of sodium for sulphate of magnesium, and bicarbonate of sodium for carbonate of magnesium, in the above prescriptions. I have often done so, and I have sometimes thought that I have derived considerable advantage from the change. Whichever is used, however, the great point to insist upon is that the treatment by either is to be undertaken with the view of ultimate cure. The medicine should be taken at least three times daily (in obstinate cases an additional dose at bedtime is advantageous). Each dose must be well diluted with water, and must be so regulated as to produce no more than two motions in the day. The object is to educate the intestines to do their work normally; the stimulation must, therefore, be slight, and, above all things, sustained. By degrees the amount of the drug is decreased, until the bowels act as the result of the water alone.

In following out this plan of campaign, it is seldom necessary to use more than one other drug—namely, calomel, in giving which the rule of small doses must be scrupulously observed. Large doses act as drastic purgatives, and drastic purgation is one of the things we should be most careful to avoid. A good plan is to give it in doses of from $\frac{1}{6}$ to $\frac{1}{3}$ grain once a day during the first week of treatment, and thereafter once or twice a week, still in the same doses. How it acts, whether by stimulating the liver or by promoting intestinal asepsis, it is difficult to say; this, at any rate, is certain—that all cases do better with it than without it.

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There is an accessory whose aid it is useful to invoke during the first week or so in really bad cases of obstinate habitual constipation—namely, Kussmaul's well-known oil enema method. This is of great service where there are masses of impacted fæces in the large intestine, but in such cases the oil should not be used alone. I have had experiences which convince me that disturbance of these masses is very liable to cause an abrupt discharge of toxins into the circulation, with results which are frequently alarming. I am therefore now in the habit not only of giving small doses of calomel by the mouth, but of adding an antiseptic in the form of 5 to 10 drops of the oil of eucalyptus to each enema of olive oil, and since I adopted this method I have met with no unfavourable symptoms.

It may be affirmed that these methods of treatment are successful in the vast majority of cases of chronic constipation occurring in people who are still young enough to respond, and the younger the patient, the greater is the confidence with which they may be prescribed. If the main principle of small doses, well diluted, frequently repeated, and continued over long periods of time, is well kept in mind, and if the co-operation of the patient in the carrying out of this principle can be secured, the malady in my experience invariably yields, assuming, of course, that there is no structural obstacle to its doing so.

It follows from what has been said above that imported purgative waters, in that they lack constituents

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which augment the expulsive power of the intestine, are liable to prove unsatisfactory in the treatment of severe chronic constipation. In the slighter forms they may accomplish all that is necessary, but where, from the occurrence of flatulence and dyspepsia, it becomes evident that their action must be reinforced by the addition of strychnine, it is better to discard them altogether and to prescribe the purgative in the ordinary way. Having regard to latter-day views on the subject of the action of common salt on renal secretion (*vide* Chapter V.), and remembering that the majority of these waters contain chloride of sodium in large quantities, it is well to be on our guard against prescribing them for people, such as the gouty, in whom the kidneys are in any degree under suspicion. In weakly people the presence of the salt generally does good, as it seems to enable them to digest the waters well; but for the sthenic type of invalid it is desirable to select a water—such, for example, as Arabella water—which contains the chloride in small quantities only.

A method of treating chronic constipation[1] which has found many advocates during the last few years is that of lubricating the intestinal canal by means of petroleum or vaseline preparations. Of these preparations there are a great many on the market, but that which patients seem to take most readily is Terrol.

[1] 'Neue Beobachtungen zur Erklärung, und Behandlung der habituellen Obstipation.' *Muenchen. Medezin. Wochenschrift*, No. 41, October 10, 1905, p. 1970.

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It is claimed for some of them that they are nutrients, in the same way that cod-liver oil is a nutrient; but, in view of the fact that the whole quantity of vaseline ingested can be recovered from the fæces, this claim is one which cannot be sustained. The manner in which the vaseline acts so as to benefit the constipation is a little difficult to follow, but probably, in addition to lubricating the intestines, and thus facilitating the passage of the hardened motions, it prevents in some degree the reabsorption of the toxins, and thus favours indirectly the efficient contraction of the muscular walls. Terrol may be prescribed in doses of 1 to 2 drachms three times daily. Agar-Agar and liquid paraffin in the form of Paroleine (B. W. and Co.) are equally successful. This line of treatment is especially applicable to people past middle age, and in a great many cases it certainly acts in a remarkably satisfactory manner.

For the habitual constipation which is liable to occur in old age, belladonna appears to be the remedy par excellence. About $\frac{1}{4}$ grain of the extract made into a pill with $\frac{1}{4}$ grain of extract of nux vomica is given every night until the bowels can be trusted to act without it. This may take a considerable time, but although I have watched for signs of belladonna-poisoning, I have never seen them occur from even larger doses than the above. It is a good plan to begin the treatment by adding $\frac{1}{8}$ grain of aloin to the pill for a week or so. If the fæces are dry the

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addition of ¼ grain of pulv. ipecac. will be found invaluable. The pill, thus constituted, with the addition of $\frac{1}{60}$ grain of the sulphate of strychnine, was at one time known as Sir Andrew Clarke's pill, and was a very favourite remedy with many for the treatment of chronic constipation in weakly subjects. A dinner pill — *i.e.*, a pill to be taken every day immediately after dinner—which is useful in patients of a more robust type is as follows:

R. Ext. aloes soc.
Ext. nucis vom. } ... ... ää gr. ss.
Pulv. ipecac.
Pulv. capsici ... ... gr. i.
M. Ft. pil. i.

A remedy for chronic constipation which has the merit of leaving but very slight tendency to after-constipation is cascara. It has, however, the demerit of being very unpalatable in its ordinary forms, and, in its ordinary solid form, of producing griping. A French preparation which seems to avoid both these difficulties is Cascarine le Prince. It is in pill form; it causes no discomfort, and is very effectual in inducing a sufficient daily evacuation. In the systematic treatment of chronic constipation it is often advantageous to change a remedy which appears to be creating for itself a tolerance. Under such circumstances I have found it useful to give Cascarine in the place of the saline, alternating them for periods of about a fortnight until the desired regularity is established.

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A remedy for mild degrees of chronic constipation which presents many advantages is the kharu fruit, a wild plum indigenous to the region of the Amazons, which is possessed of tonic and laxative properties. The fruit is preserved and put upon the market in the form of bonbons, which makes it very acceptable to children and fastidious women. When persevered with, it is certainly helpful in overcoming mild degrees of intestinal atony.

DIARRHŒA.—The first thing we have to remember about this condition is that, except in children, it cannot be regarded as a disease *per se*. In the latter it is often rather more than merely symptomatic, and as in them the condition is liable to assume an aspect of the highest importance and the utmost gravity, which is adequately dealt with in most text-books, I do not propose to refer to it.

Diarrhœa in the adult, except where it means typhoid, dysentery, or some equally obvious condition, spells intestinal irritation. And in connection with this irritation we have to remember that what will irritate one person will fail to produce any effect upon another —or, for that matter, upon the same person under different conditions. The diarrhœa of the neurotic or neurasthenic person, for example, is an instance of the result of very minute stimuli upon a sensitive organism, and the proper way of treating it is not by attempts to remove the irritation, but by lessening the reactive power of the individual. There are a good many people who go about in mortal dread of being

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'taken short' at inconvenient times and places—*e.g.*, in church, or on a long railway journey; and their very nervousness under such conditions supplies the stimulus necessary for the production of the very condition which they dread. In such cases the exhibition of the bromides and other measures, physical and moral, calculated to strengthen the nervous equilibrium, constitutes the proper line of treatment. Astringents, especially opiates, should be avoided.

Diarrhœa may be salutary. This is worth remembering, especially in view of the fact that the condition is, to say the least of it, very inconvenient, and that the subjects of it are consequently very insistent in demanding relief. It is salutary when, as in alcoholism and kidney disease, the bowels are called upon to do more of the excretory work of the body than legitimately falls to their share. When such a state of matters is to be suspected the right treatment consists in calling upon the other emunctories, especially the skin, to undertake their share of the burden, and by suitable diet to lessen as much as possible the manufacture of the offending material. A hot bath—hot enough, that is, to produce free diaphoresis—is an expedient which is too much neglected in the treatment of this condition. The warmth is very grateful to the patient, and the diaphoresis helps to relieve the work of the intestines. In this way the diarrhœa is checked, while the discharge of the offending material is not interfered with.

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The commonest cause of diarrhœa, however, is the presence of irritating matter in the intestinal canal itself. Here the condition is not salutary, because it is as a rule futile. The irritant, whatever may be its nature, produces increased peristalsis below the point at which it is situated, so that the resulting diarrhœa tends to exhaust the patient, without in any way contributing to the removal of the cause. In such cases, which constitute the vast majority of those with which we have to deal, an efficient evacuant (say ½ ounce to 1 ounce of castor oil) which will act on the intestine from above the site of the irritant should be given at once. It seems needful to dwell upon the necessity for this, because I find that diarrhœa is so often treated by astringents without any preliminary evacuant—a procedure which is as unscientific as it is useless. Slight looseness of the bowels may, of course, occasionally be successfully so treated; but we must remember that household remedies have invariably been tried before a case of diarrhœa reaches a doctor, and that household remedies consist of astringents. To neglect the evacuant, therefore, is to do wrong both scientifically and tactically; the only effects of so doing are to prolong the sufferings of the patient and to bring discredit upon the practitioner.

When the bowels have been cleared of the offending matter, astringents may be given with every confidence. In these it is generally wise to include opium, always supposing, of course, that the kidneys are in a

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healthy condition. Opium not only assists the action of the astringents, but it affords rest to the bowel and soothes the irritated nervous system. The combination which I have found most efficacious for this purpose is as follows:

℞.	Tr. opii	♏x.
	Sp. ammon. co.	♏xxx.
	Ess. menth. pip.	♏xx.
	Tr. catechu	ʒi.
	Aquam	ad ℥i.

M. Sig.: Every four hours.

Preceded by a dose of castor oil and a hot bath, I have never known this mixture to fail in affording relief in diarrhœa when the condition was caused by a simple as opposed to a specific irritant. Diet is, of course, an important matter in guiding the malady to a satisfactory conclusion, but the dietetic management consists more in the application of rational general principles than in the prescription of any particular régime. It is advisable to remind the patient that food, when well masticated and insalivated, leaves very little for the irritated intestines to do, and that the more thorough these processes are the more quickly will the irritation subside. Milk is probably the best food for those with whom it agrees. For those who cannot take milk, fish, poultry, and meat, as less liable to give rise to fermentation, are better than farinaceous foods.

Diarrhœa is apt to appear as an early event in two complaints, of whose existence it is occasionally neces-

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sary to remind ourselves—namely, Graves' disease and Addison's disease. The latter is not very common, perhaps, but when it does occur it is well for all parties that it should be recognised early. To this end it should always present itself as a possible explanation of what may appear to be an ordinary attack of diarrhœa. The same is true of Graves' disease. This is far more common than Addison's disease, and as its only other symptom may be tachycardia, we should be on our guard against dismissing as a little 'intestinal irritation' a case which may ultimately progress to thyroid enlargement and exophthalmos. Tannigen (di-acetyl-tannin) is a good symptomatic astringent. It should be given in a cachet (10 grains) three times a day.

Fissure of the anus and stricture of the rectum often lead to diarrhœa by causing accumulation of fæces. Persistent diarrhœa in a person over forty should always lead to a careful examination of the rectum, as malignant disease is, under such circumstances, probably the commonest of all causes.

VOMITING, like diarrhœa, usually appears as a symptom of some definite underlying morbid condition; but, like diarrhœa, it also occurs as an apparently separate clinical entity, for which no cause can be discovered beyond an undue irritability either of the stomach itself or of the vomiting centre in the brain. It is a common symptom of gastric disorders, and in searching for a cause, one's thoughts naturally turn primarily towards the stomach. It

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should always be remembered, however, that there are two serious conditions with which it is often associated, and whose existence is liable to be overlooked if we make the mistake of considering too exclusively the gastric origin of the symptom: one is intracranial disease, the other is renal disease. In both these conditions the sickness may easily be the only obvious symptom, and, unless we make it a rule always to examine the urine and the fundus oculi in every case of vomiting for which no obvious explanation is forthcoming, we lay ourselves open to the risk of very grave errors of diagnosis.

Cerebral vomiting is generally accompanied by headache and optic neuritis, and careful search for physical signs in the nervous system will nearly always bring to light some other facts which point to its true origin. It is a common and very disastrous mistake to label as hysterical, sickness which is due to some serious intracranial lesion. Vomiting does, of course, occur in hysteria, but, then, hysterical or 'functional' manifestations are of very frequent occurrence in almost all intracranial conditions, so that it is never safe to make a diagnosis of hysteria until structural disease can be positively excluded. In children vomiting is commonly an early event in meningitis.

Vomiting may be the first event to call attention to the existence of *kidney disease*, and negligence to examine the urine may thus be fraught with very serious consequences; for if we do not realize that

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the sickness is of renal origin, not only shall we fail to treat the disease by appropriate means, but in our endeavours to stop the vomiting we may have recourse to measures, such as the giving of morphia which may actually militate against recovery. Moreover, it is well to remember that absence of albumin does not necessarily exclude the possibility of disease of the kidneys. In nephritis, of the chronic interstitial type especially, albumin may be absent, so that evidences of renal trouble must be sought for by examination of the heart and arterial system—the former for hypertrophy of the left ventricle, the latter for arterio-sclerosis.

Other common causes of vomiting are *hernia*, *pregnancy*, *whooping-cough*, and *phthisis*. It is, of course, of the utmost importance to bear the existence of these factors in mind, so that they may be examined for. Our mistakes are less often due to ignorance than to the forgetfulness or negligence begotten of hurry. A form of vomiting which is characteristic enough to lead one immediately to suspect its true cause is that which heralds the invasion of an *acute specific disease*. Here the sickness is not accompanied either by nausea or retching, but the contents of the stomach are suddenly, completely, and unexpectedly expelled without pain or discomfort. Except where an emetic has been given, this kind of sickness is very suggestive of the onset of an acute fever of some sort.

The vomiting which occurs in association with the

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condition variously called *sick headache* and bilious headache is liable to be very troublesome, more especially if the true nature of the underlying condition is not recognised and treated. This matter is fully discussed in the next chapter, but I may say here that the name bilious, as applied to these attacks, is particularly unfortunate, for the reason that it suggests treatment by mercurial and other cholagogue cathartics, than which, as a rule, nothing can be more harmful. These attacks are in a very large number of cases due to ocular refractive errors and other peripheral irritants; and unless the patient is properly fitted with correcting glasses, or the irritation otherwise subdued, drugs such as phenacetin, though they may give relief at the time, contribute nothing whatever to the prevention and ultimate cessation of the attacks.

The influence of refractive errors in the causation of vomiting, apart altogether from headache, does not seem to be sufficiently appreciated. It is by no means uncommon for a person whose error—say a low degree of astigmatism—has been corrected, and, before he has accustomed himself to the use of the glasses, to complain that the glasses cause nausea, and even attacks of vomiting. These attacks will often lead to the discontinuance of the glasses. This is a very foolish procedure, into the result of which it is impossible here to enter. What it seems necessary to insist upon is that nausea, vomiting, and a host of other symptoms, often rightly attributed to neurasthenia, but

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more often wrongly relegated to hysteria, are very frequently due to uncorrected errors of refraction, and that, unless these errors are corrected, the symptoms will persist. Eyestrain[1] is responsible for an enormous amount of ill-defined nervous troubles of modern life, and the practice of some ophthalmologists of dismissing low degrees of error as unimportant is responsible for much of the futility in the treatment of these troubles.

Sea-sickness is in many cases, at any rate, traceable to the ocular apparatus. The landsman is unable, because he is unaccustomed, to accommodate his visual machinery to the rapid and sudden changes of movement caused by a rough or choppy sea, and his efforts to bring about this accommodation give rise to nausea and vomiting. That, in many cases, this is the sole factor at work is evident from the fact that the simple expedient of wearing a patch over one eye when on board has been sufficient in so many cases to prevent sea-sickness. No efforts are made to reconcile the workings of the two eyes; strain is prevented, and sickness remains absent. It is not, of course, suggested that sea-sickness is always due to this cause, but it very often is, and the above-mentioned expedient is consequently always worth a trial. In the majority of cases, no doubt, other factors are also at work, and in most of them we must suppose that there is an undue irritability of the nervous system, which causes a too ready response to slight stimuli.

[1] See next chapter.

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In patients of this type it is generally quite easy to prevent sea-sickness if we can commence treatment a week or so before the voyage begins. The excitability of the general nervous system is reduced to normal by giving bromide of ammonium in 10-grain doses three times a day for at least three days. The primæ viæ are suitably cleared, and, with a view of exercising a special effect upon the stomach, some liq. bismuth. ammon. cit. (2 drachms) with tr. nucis vom. (3 minims) is added to each dose of the bromide mixture.

The medicine should not be taken on board—not only because it is then too late, but also because there is another drug which has proved in my experience unfailing, even when given without any preliminary preparation by bromides—namely, chloretone. A good way of giving chloretone is to prescribe it in 5 to 10 grain cachets—one cachet to be taken during the train journey down to the boat, another as soon as the patient is settled on board, and a third, if necessary, at any time during the voyage. If the patient is directed to preserve the dorsal posture when on board, the third cachet is very seldom necessary. I have now prescribed chloretone in a great number of cases, and where the way has been prepared for it by the bromide mixture, I have not known it fail, and even in the absence of any such preparation, I have learned to have the utmost confidence in it. It may be given in 10-grain doses if sickness threatens. It will often stop an attack which is actually in progress.

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It is not infrequently necessary to treat symptomatic vomiting, either pending the removal of the cause or when the cause is unfortunately not removable. A great many expedients have been suggested for this purpose, some of which are often useful, but which seem as often to be without effect. The application of a blister or a mustard-plaster to the epigastrium is often very successful, but no less often useless. Occasionally successful, also, is the application of an ice-bag to the same region, or a poultice, or gentle massage. These are all well worth trying, for they are simple enough, and if they do not succeed, they cannot do any harm.

Of drugs, the simplest is undoubtedly lime-water, and Burney Yeo urges strongly that it should be given a trial more frequently than is now the case. A tablespoonful, he says, should be administered hourly for several hours before recourse is had to other means. He recommends, further, the addition of one drop of creosote well shaken up with each dose, in case the lime-water alone is unsuccessful. Champagne is perhaps one of the most popular of all remedies for this condition, and it has the merit of being one of the most efficacious. It should be given, preferably iced, in quite small doses, say 1 to 2 drachms, repeated at intervals of ten minutes or a quarter of an hour, until vomiting ceases. I have known many cases in which this succeeded when all other measures had failed.

Vin. ipecac., liq. arsenicalis and hydrocyanic acid have all enjoyed some reputation in the treatment of

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vomiting, and for this purpose they are all employed in minute doses—*i.e.*, not more than 2 minims. Ringer speaks highly of vin. ipecac., but not everyone is able to share his enthusiasm. Fowler's solution is admittedly useful in the morning vomiting of drunkards, but I have found it beneficial in symptomatic vomiting arising from other causes. Hydrocyanic acid is usually very reliable, but it is not wise to restrict its use to the small doses above suggested. It may be necessary to prescribe it in 3 or even 5 minim doses to produce the required effect, but these must obviously not be frequently repeated. A combination of all three drugs in 1-drop doses, repeated at intervals of ten minutes or a quarter of an hour, is an expedient to which I have occasionally resorted with success.

Bismuth is a useful drug in vomiting, and, in combination with oxalate of cerium, it is, when the stomach will retain anything, probably the most reliable of all. It is best given in cachets:

℞. Bismuth subnit. ... ... gr. xx.
Cerii oxalat. ... ... gr. v.
M. Ft. pulv. in cachet i.

But the cachet must be well moistened before any attempt is made to swallow it. Finally, morphia by hypodermic injection, though it often causes vomiting, will not infrequently stop it. When given for this purpose the dose should be relatively large—that is, about ½ grain. Small single doses are much

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more liable to cause gastric disturbance than large ones.

In association with vomiting it seems appropriate to consider briefly the allied condition of **GIDDINESS.** Although this condition is common in cerebellar disease, especially cerebellar tumours, in disseminate sclerosis, and is not altogether uncommon in tabes, it should not be regarded as necessarily indicating the presence of some grave cerebro-spinal mischief. It is frequently due to ocular troubles; paralysis of an ocular muscle will give rise to it, and errors of refraction are among the commonest causes. Abnormalities in or about the ears very readily occasion the symptom, hardened cerumen being among the most frequent.

Ménière's disease, or aural vertigo, which is due to an affection of the semicircular canals, may cause paroxysmal attacks of giddiness, accompanied by vomiting, and is thus liable to be mistaken for migraine (*q.v.*, p. 144). Ménière's disease is, however, almost always associated with some degree of deafness, which is seldom the case in migraine; moreover, in aural vertigo the giddiness is very pronounced; so much so that the patient not infrequently falls. For the treatment of aural vertigo, bromide of potassium and belladonna, persevered with over long periods, often do a great deal of good. During the attacks both quinine and the salicylates are highly spoken of. The former should be given in large doses (10 to 15 grains or more); the latter, in the form of aspirin

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(10 to 15 grains), is probably equally efficacious and less liable to produce unpleasant by-effects. Sometimes hydrobromic acid acts better than any of the bromide salts. This drug is much the most reliable remedy we have in those persistent noises in the head which occasion annoyance and alarm to those who suffer from them.

Giddiness is said to be sometimes due to causes arising in the digestive apparatus. There is very considerable doubt as to the stomach ever being directly responsible for the symptom. The real cause of giddiness in most cases, apart from those which have just been noticed, is some disturbance in the vaso-motor mechanism. We know that toxins originating in the digestive tract are very powerful disturbers of this mechanism, and it is exceedingly likely that digestive disturbances may cause giddiness in this way. The disturbance as a rule takes the form of vaso-constriction, but there seems no reason why the opposite condition of vaso-dilatation should not also bring about the same result. The circulatory apparatus in the brain is of so delicate a nature that any alteration of the calibre of the conducting vessels is liable to cause symptoms. The giddiness of elderly people usually means atheroma; that of the gouty, either high arterial tension or its next stage, arterio-sclerosis; even the giddiness of epileptics is probably circulatory in origin, and that which is so common at the climacteric is certainly so.

Attacks of giddiness, therefore, should never be

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lightly regarded. They may be due to transitory causes, but they may, on the other hand, indicate some very serious condition. They should always lead to a careful examination of the nervous system, including the special senses, and, failing the discovery of a cause therein, the question of the state of the heart and bloodvessels should engage the most anxious attention. It is not too much to say that the vast majority of cases of 'simple' giddiness are due to vascular changes, and that among these high blood-pressure occupies the first place. For a consideration of this question and its treatment, the reader is referred to the chapter on Goutiness.

ADDITIONAL FORMULÆ.

For Colic (Ludlow).

℞ Chlorof. ... ... ʒii.
Morph. acetat. ... ... gr. iii.
Olei anisi ... ... ♏xvi.
Ol. menth. pip. ... ... ♏xvi.
Syr. acacia ... ... ʒss.
Aq. camph. ... ... ad ʒiv.
M. ʒii.-ʒss. for a dose.

For Colic with Constipation (Paris).

℞ Ol. cajuput ... ... ♏iv.
Sacch. alb. ... ... gr. x.
Rub together, and add:
Tr. jalap. ... ... ʒi.
Decoc. aloes co. ... ... ad ʒiss.
M. Ft. haust.

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For Colic of Infants (Widerhofer).

℞. Tr. cascarillæ ... ... ℥x.
Tr. krameriæ ... ... ℥x.
Ol. anthemidis ... ... ℥i-ii.
Syr. simplicis ... ... ʒiiss.
Aquam ... ... ad ʒii.

M. Sig.: One teaspoonful every two hours.

Constipation in very Young Infants (Monti).

Mannite ... ... gr. cl.
Hot water ... ... ʒiss.

M. A dessertspoonful every hour until it acts.

Cachets for Constipation (Huchard).

Calcined magnesia ... ... ʒvi.
Cream of tartar ... ... ʒiii.
Sodium bicarbonate ... ... ʒss.
Sugar flavoured with oil of aniseed ... gr. xv.

To be divided into forty cachets. One before each meal.

Pills for Chronic Constipation (Nothnagel and Bamberger).

(*a*) ℞. Podophyll res. ... ... gr. i.
Ext. aloes aq. ... ... gr. x.
Ext. rhei ... ... gr. x.
Ext. taraxaci ... ... gr. xv.

M. et divide in pil. x. Sig.: One to three at bedtime.

(*b*) ℞. Podophyll resin ... ... gr. iv.
Ext. belladonn. ... ... gr. ii.
Ext. gent. } ... ... āā gr.
Pulv. menyanthis }

Ut ft. pil. xxv. Sig.: One to three every morning.

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Pills for Gouty Constipation.

℞. Iridin ... ... gr. xxiv.
Aloes pulv. ... ... gr. xviii.
Ext. hyoscyam.... ... ... gr. vi.

M. et divide in pil. xii. Sig.: One at bedtime, followed by a saline in the morning.

For Diarrhœa in Infants, after an Aperient (Eustace Smith).

(*a*) ℞. Saponis duri Hispanioli ... ... gr. xvi.
Cretæ prep. ... ... gr. xx.
Syr. flor. aurant. ... ... ʒii.
Aq. menth. sativ. ... ... ʒiii.
Aquam fœniculi ... ... ad ʒi.

M. Sig.: A teaspoonful every eight hours for a child between six and twelve months of age. Older children may take the same quantity every six hours.

(*b*) ℞. Spts. ammon. aromat. ... ... ♏xx.
Tr. rhei ... ... ♏xxiv.
Tr. opii ... ... ♏iv.
Spts. chlorof. ... ... ♏xxiv.
Aquam carui ... ... ad ʒi.

M. Sig.: One teaspoonful every eight hours for a child of six months old.

Diarrhœa of Adults, after an Aperient (Hare).

(*a*) ℞. Tr. kino ... ... ʒi.
Tr. catechu ... ... ʒi.
Mist. cretæ ... ... ʒiii.
Aquam cinnamomi ... ... ad ʒvi.

M. Sig.: ʒss. every three hours.

(*b*) ℞. Acid. sulph. aromat. ... ... ʒss.
Ol. cajuput ... ... ♏xl.
Ext. hæmatoxyli ... ... ʒii.
Spts. chlorof. ... ... ʒi.
Syr. zingiber ... ... ad ʒiii.

M. Sig.: ʒi. in water every two or three hours.

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CHAPTER IV.

RHEUMATISM, NEURALGIA, HEADACHE.

RHEUMATISM is a term which, if it ever had a precise meaning, has now, unfortunately, lost it. As applied to acute rheumatism or rheumatic fever, it bears, no doubt, a definite significance, but it is now generally admitted that the disease which is so described has no real relationship with the numerous other morbid conditions to which the terms rheumatism or rheumatic are commonly applied. These terms are made to comprise most of the arthropathies, both acute and chronic. The arthropathies have been very conveniently divided into the essential and the accidental; the former being those in which the joint affection is the predominant feature in the disease, such as gout, acute and subacute, rheumatic fever, morbus coxæ senilis and rheumatoid arthritis; the latter being those in which the joints are involved secondarily to some other affection, such as pulmonary osteo-arthritis, and the arthritis of gonorrhœal, scarlatinal, septic, syphilitic or neuropathic origin. These conditions are, of course, quite distinct from each other, and, as they all belong to the sphere which is properly

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covered by the text-books, they need not concern us here. There remain for our consideration, then, chronic gout and chronic rheumatism. The former is dealt with in the next chapter; into the problems presented by the latter I now propose to enter.

In the existence of chronic rheumatism, properly so called, I may say at once that I do not believe. I do not believe, that is, that there is any chronic form of the condition which we call acute rheumatism, or rheumatic fever. Fagge says: 'Chronic rheumatism ought to mean a chronic arthritis of the same pathology as the acute outbreaks of rheumatic fever. Such a disease, we may affirm, does not exist.' With this opinion, though it is not shared by all, even by so great an authority as Osler, I am in entire accord. Certain chronic joint troubles, it is true, are liable to appear as sequelæ of rheumatic fever; but these same joint troubles appear equally often after true influenza, after sore-throats, and, in the predisposed, after local injury to joints, such as sprains. Moreover, these joint troubles, inasmuch as they affect, not the cartilage, synovia or bone, but merely the fibrous tissues surrounding the joint, have no real relationship to those which occur in acute rheumatism. The conditions which are admittedly closely related to true rheumatism, such as chorea, tonsillitis, and subcutaneous nodules, have, of course, no arthritic element, and are not in any sense of the term chronic; so that although their power of causing rheumatic endocarditis should never be lost

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sight of, it is impossible to include them in such a term as 'chronic rheumatism.'

The fact is, chronic rheumatism has nothing whatever to do with true rheumatism, and it would be well if some authoritative name could be applied to the condition which is variously described as rheumatics, chronic rheumatism, muscular rheumatism, tendinous rheumatism, rheumatic myositis, myalgia, and neuralgic rheumatism; for the morbid state which is thus buried beneath misleading and confusing names has a very distinct and very definite existence, with its own pathology, symptomology, and therapeutics, so that the retention of the term 'rheumatism' in connection with it is not to be defended even on the ground of convenience. In the meantime, being to some extent bound by custom, I propose to use the expressive, illiterate, but highly convenient term 'rheumatics,' invented by and beloved of the laity, to designate the condition.

Rheumatics, then, may be described in the terms of Stockman,[1] who has done so much to introduce order into the chaos which previously existed on this subject, as a condition in which the essential pathological changes are confined to white fibrous tissue; in which, therefore, the manifestations appear chiefly in aponeurosis, fibrous septa, the sheaths of muscles and nerves, periosteum, and the fibrous structures surrounding the joints. 'The lesion,' he

[1] *British Medical Journal*. February 27, 1904.

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says, 'consists in inflammation and hyperplasia of the connective tissue in patches, and the condition may be widely spread over the body or be confined to a certain area of it.'

When once the conception presented by this description is realized, the isolated and disconnected facts which have hitherto been associated with the condition at once fall, as it were, into their appropriate places. White fibrous tissue is found practically in all parts of the body, so that the rheumatics may appear anywhere; but inasmuch as there is a special distribution of this tissue in connection with joints, voluntary muscles, and nerves, it is not surprising to find that it is in these structures that the disease most often shows itself. It is thus evident that so-called chronic articular rheumatism, muscular rheumatism, or myalgia, especially in the form of lumbago, neuralgia, especially in the form of sciatica and brachialgia, are all one and the same disease, the only real difference between them being the anatomical situation of the fibrous tissue which is attacked by the inflammation and hyperplasia described by Stockman.

Where the fibrous tissues all over the body are more or less impartially attacked, the result is what is known as febricula, or feverish cold—a condition to which reference has already been made (Chapter I.) as a fruitful source of error in diagnosis; those who do not remember its existence almost invariably labelling it 'influenza.'

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'Rheumatics,' then, includes arthritis, lumbago, torticollis, and other aponeurotic and muscular inflammations, wherever situated; sciatica, intercostal and other neuralgias; and, inasmuch as the pericardium, pleura, and dura mater are all richly supplied with white fibrous tissue, it will be proper to comprise in this category certain forms, at any rate, of cardialgia, pleurodynia, and rheumatic headache.

This inflammation of white fibrous tissue or 'fibrositis,' as Sir William Gowers has named it,[1] is said to be due to a variety of causes. It certainly seems to be determined by many conditions and influenced by many others, but the cause is probably always the same. This cause is connected with the gastro-intestinal tract, and is almost certainly produced by the absorption of toxins therefrom. The toxins are the result of defective metabolism, from the too free ingestion of meat foods and alcoholic drinks, or their inadequate elimination.

Such a state of matters does not constitute gout, but it constitutes a condition very nearly allied thereto, and we are generally quite safe in treating a person who is subject to fibrositis as if he were goutily inclined. And this we may do in spite of the fact that the manifestations are by no means confined to the old or middle-aged. The old are, perhaps, more prone to be attacked by chronic arthritic fibrositis, but myalgia is more common in

[1] 'Lumbago,' by Sir William Gowers (*British Medical Journal*, January 16, 1904).

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young adults, and even children are occasionally affected.

Of determining causes, damp, cold, and atmospheric changes appear to be the most potent. It is difficult to trace the connection between the states of the weather and the incidence of fibrositis, but that there is a very intimate connection everyone who has ever suffered from the disorder will readily agree. Many a patient complains that he is a regular barometer, that he can be sure that a change is imminent, but none can foretell with any approach to accuracy what the nature of the change will be. Some will have an attack when the wind is going to the east, others when it is going to the west, and most will predict an increase in atmospheric humidity.

The question is an interesting one, about which, however, very little is at present known. These atmospheric influences, whatever they may be, are particularly liable to affect joints or muscles which have been the seat of injury or overwork. Thus, the rheumatics will always select by preference the fibrous tissue surrounding a joint which has been sprained, and the 'golf shoulder' or 'tennis elbow' will be found afflicting the particular joint which has borne the brunt of the season's work. The prevalence of lumbago is almost certainly susceptible of a similar explanation, in that the muscles and aponeuroses therein concerned are those which maintain the erect posture.

The application of sudden cold is a very powerful

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determining cause. Sitting in a draught will unquestionably bring on an attack in a predisposed person. A common history is that of a sudden onset during the cold morning tub, and some bathing fatalities are probably due to this cause. But whatever may be the exciting or determining cause of a particular attack, the point to remember is that the essential condition precedent is the existence of a toxin in the blood, and that that toxin in the large majority of cases, if not in all, is of gastro-intestinal origin. This fact at once points to the two most important indications in the treatment of a fibrositis wherever it may appear, and these are the cleansing of the gastro-intestinal tract by a mercurial purge, and the careful regulation of the diet by the diminution of meat foods and alcoholic drinks. An additional measure of the utmost utility at the outset is an ordinary hot bath of 100° F. or over, or, better still, the hot wet pack. A radiant heat bath is probably better than either where this can be procured without exposing the patient to the risk of subsequent cold. Warmth and equability of temperature are very important during the first forty-eight hours of an attack.

So much, then, for the etiology, pathology, and general indications for treatment of fibrositis. Let us now proceed to consider the condition as it appears in the various parts of the body; and first, as to its manifestations in the neighbourhood of the joints. One of the characteristics of the condition is that one

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joint only is usually affected. This is the rule, to which there are, of course, exceptions, but it is seldom indeed that more than three are affected. In recurring attacks it is nearly always the same joint which is involved, and, if any joint in the body has ever been the seat of injury, it is tolerably certain that the fibrositis will select that one. When once the process has established itself in a joint there is not, as in true rheumatism, any tendency to leave that joint and go to another. The complaint in connection with the affected joint is one of pain and impaired mobility, the latter usually depending very much upon the former. The pain is not often to be described as merely chronic; it is much more often subacute, and occasionally it is even acute. It is aggravated by sudden and violent movement, and varies greatly with changes of temperature and atmospheric humidity. The arthritis is never accompanied by fever, and it has no tendency to produce endocarditis or other complications.

The medicinal treatment of this manifestation of 'rheumatics' is not very successful. The salicylates, especially in the form of aspirin (10 to 15 grains three times daily), are occasionally beneficial, though I have had better and more uniform results from iodide of potassium and guaiacum (10 grains of each three times daily). Antipyrin, together with salicylate of sodium, is a useful combination, especially where pain is a prominent symptom; but this combination is less useful here than in the neuralgic type of the

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affection. Locally, the application of warmth is invaluable. A hot douche, which, in the case of such joints as the wrist, knee, or ankle, can be improvised at home by holding the part under a hot tap, is an excellent expedient, to which recourse may be had two or three times a day with great advantage. Hot fomentations, especially when frequently repeated, are also very useful, and compresses of potassium iodide and citrate of lithia often seem to hasten resolution. Local exposure to radiant heat is in my experience one of the very best means of bringing about resorption and disappearance of the fibrous thickening which is the essence of this condition.

Although it is, on account of the pain, necessary to keep the joint for the most part at rest, this must not lead to forgetfulness of the fact that movement is absolutely essential to anything approaching a satisfactory issue. This movement must at first be slight and passive, but as the pain subsides it should become free and active. An enormous amount of avoidable crippling is brought about by allowing patients to 'coddle' joints thus affected. Movement is the essence of the cure, and if it is neglected the joint very readily becomes stiff and disabled. Of course, the movement must be applied with sympathy and discrimination. It is better that the doctor himself should do it during the acutely painful period, if there be one, and as soon as circumstances permit he may delegate the duty to a competent masseur, or,

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where such is not available, it is usually not difficult to instruct a member of the household in this means of restoring function.

These and similar measures are in very chronic or recurrent cases much better carried out at a spa than in the patient's own home. It is, indeed, in the treatment of such cases that the baths, douches, and massage for which such places are famous, justify most completely the confidence which is now so generally accorded them. Of Continental summer resorts Aix-les-Bains justly enjoys the highest reputation, but Vichy, Luchon, Baden-Baden, and many others, are fully equipped for the treatment. In winter Salsomaggiore, in Italy, is a place to which such patients may very suitably be recommended. In this country at Buxton, Woodhall Spa, Llandrindod and Harrogate in summer-time, and at Bath and Sidmouth in winter, the necessary treatment is admirably carried out; and by no means the least advantage of the home stations is that the practising physicians have, owing to the English climate, opportunities for gaining an amount of experience in the various phases of the condition which is denied to their continental brethren.

MYALGIA.—If, of the pains of arthritic fibrositis, it may be said that they are subacute more often than chronic, of those of myalgia, or muscular fibrositis, it may be affirmed that they are acute more frequently than subacute. They vary, of course, as do the others. They are generally confined to one set of muscles, as

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those of one shoulder-joint or one side of the neck (torticollis); they are usually relieved by firm pressure, and are invariably worse at night. This aggravation at night, or rather in the early morning, is very characteristic. The patient wakes in great pain, so great that he doubts the possibility of being able to dress himself; nevertheless, when he begins to move, even in his bed, he finds that matters are not so bad as they at first seemed, and by the time he gets downstairs his troubles may have resolved themselves into stiffness and fear of sudden movement. The onset of myalgia is generally sudden, occasionally so sudden as to give the impression of a blow, and when it starts in this way it is apt to be very acute.

Lumbago is often quoted as the typical form of myalgia. This in my opinion it certainly is not, for the reason that in most cases, if not in all, the fibrous tissue in connection with structures other than muscle are always involved. Luff[1] is certainly right when he says: 'In the majority of cases of lumbago the affection is not in the quadratus lumborum, nor even in the deeper muscles of the back, but is in the fibrous tissues directly over the sacro-iliac joint and in the joint itself.' It is from the spreading of the inflammation along the sheath of the sciatic nerve that we find lumbago and sciatica so frequently associated.

A much better instance of myalgia, though even here tissues other than the muscular are often included, is supplied by deltoid and brachial myalgia.

[1] *Clinical Journal*, October 11, 1905.

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This is liable to be very acute, and is generally of long duration; it is of all others perhaps that which is most conspicuously influenced by meteorological variations, and subject to nocturnal exacerbations. Stiff neck, or torticollis, is another good instance. This is especially common among young adults, and is fortunately very amenable to treatment.

Myalgia will often pass off in a few days without anything more heroic in the way of treatment than a hot application and some rubbing. More often, however, it becomes obstinate to household remedies and demands careful management. Internally nothing can compare with iodide of potassium, and externally nothing is so efficacious as massage. The latter, to be effectual, should be applied twice a day by someone who is conscious of the needs of the situation. Mere superficial effleurage is useless. The muscles must be handled gently but firmly, so as to promote the lymph-flow within their substance. This will cause a certain amount of pain at first, especially if the operator be unskilful; but, in spite of this fact, the treatment must not only be continued, but it must be reinforced by the application of warmth in the form of poultices and fomentations and by the addition of stimulating liniments. A good plan is to rub the part with liniment of iodine and then apply a poultice. Camphor liniment and chloroform liniment are also useful for this purpose. Luff[1] prefers anodyne applications, and recommends a mixture of equal parts of

[1] *Loc. cit.*

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chloral hydrate, camphor, and menthol, which he says, when well rubbed together, form a liquid. Methyl salicylate and mesotan are in his experience also very valuable. But, whatever the medicament employed, a large part of its power for good resides in the method of its application, and unless this includes vigorous massage — as vigorous, that is, as pain will permit—the virtues of the drug will remain largely inoperative. For chronic cases, the massage should be accompanied by douching, as at Aix-les-Bains, by light baths, or by electricity.

Lumbago, as we have just seen, is a mixed fibrositis, partly muscular, partly aponeurotic, and largely arthritic, and inasmuch as it is so frequently accompanied by sciatica, it may be considered as in a sense neuralgic. Acute lumbago is startling and disabling. It is startling from the extreme suddenness of its onset, and disabling from the fact that the trunk cannot be moved except with great pain, so that the patient is obliged to remain in bed. It is most common in men, at or about middle age, who usually present themselves with a diagnosis ready made; for 'lumbago' with the laity means any pain in the small of the back. Such a diagnosis should, of course, never be accepted, and we ought to be careful always to examine the back, the knee and plantar reflexes, and the urine, before confirming it. I have known very grave mistakes to be made through initial negligence of these very simple precautions.

A line of treatment which was much in vogue

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twenty years ago for a sudden attack of lumbago consisted in a hot bath (100° to 103° F.), a dose of Dover's powder (12 grains), and a drachm of sweet spirits of nitre, supplemented by a linseed-and-mustard poultice to the loins. This I still believe to be an admirable course of procedure in a large number of cases; but I have learnt to distrust the action of the opium, especially in the very patients—namely, those about middle life—who are most prone to suffer from the complaint, so that I came to use James's powder, (pulv. antimonialis) 5 grains, in its stead, and to give therewith a mercurial cathartic. This method I have found to be not only more efficacious, but entirely free from the disadvantages attaching to the exhibition of opium in such cases.

For the rest, it is only necessary to reiterate what I have said above as to the value—I would almost say the paramount importance—of massage and stimulating applications in the further treatment of the condition, and the necessity for regulating the diet of the patient so as to eliminate as far as possible meat foods and alcoholic drinks. As long as pain is present the patient must keep his bed, not only on account of the pain itself, but because of the fact that equability of temperature is an important feature of the cure. Cold influences are not only in the highest degree unpleasant, but they tend above everything else to prolong convalescence and retard recovery.

The **NEURALGIC FIBROSITIS** which so often accom-

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panies lumbago may occur independently thereof, and, when so occurring, it may be regarded as the type of an affection which is liable to attack almost any nerve in the body, some common examples of which are supplied by cervico-brachial neuralgia (often called neuritis), intercostal neuralgia, coccydynia, and plantar neuralgia. In sciatica, as in lumbago, we should be especially cautious in accepting a ready-made diagnosis, for pain along the sciatic nerve may be due to causes other than fibrositis; and if the pain is markedly worse at night, or, if both sciatic nerves are involved, it is tolerably certain that some much more serious factor is in operation.[1] A 'sciatica' may be caused by a loaded rectum, by uterine and ovarian displacements, by tumours and disease of the spinal cord itself, and such possible factors should always be carefully and exhaustively investigated before the pain is pronounced to be due to a neuralgia, and treated as such.

For this purpose it is important to determine whether the pain is due to pressure, or to some factor in the nerve itself or in its sheath. In the former case the pain will not be sensibly aggravated when the nerve is put on the stretch; it may, indeed, be to some extent relieved by the process, whereas, when the mischief is in the nerve or its sheath, the stretching will obviously increase the pain. In order to set this point at rest,

[1] F. J. Smith, 'Mistakes' (*Clinical Journal*, December 27, 1905).

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the patient is placed upon his back and the pelvis firmly fixed against the bed by an attendant. The limb on the affected side, which must be kept fully extended at the knee, is then gently and gradually raised by the examiner until it is at right angles to the couch. This will put the nerve on the stretch, and if no aggravation of pain results, then the cause is to be sought outside the sheath of the nerve; it is not due to a fibrositis, and the condition is not, properly speaking, a sciatica.

So far as the treatment of sciatica is concerned, there is not much to add to what has already been said in connection with other forms of fibrositis. Massage, which is of the utmost importance in all these forms, is in sciatica the one local remedy upon which any great reliance can be placed. Dr. Lee[1] says: 'It is in sciatica, of all the neuralgias, that massage has won its greatest reputation. Truly astonishing results have been obtained, even when the affection has been of many years' standing, and after every other conceivable means of relief has proved unsuccessful.'

This coincides completely with my own experience, and since I have used massage perseveringly, assisted in suitable cases by douching and the application of stimulating liniments, I have had no occasion to resort to acupuncture, surgical stretching of the nerve and other heroic remedies which are often recommended, and which the tedious nature of these cases

[1] Hare's 'Practical Therapeutics.'

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so often suggests to the despairing physician. If massage were employed early in all cases, few would become chronic; and if it is persevered with in cases which have become chronic, even to the causing of marked wasting of the muscles, it will in time always bring about a cure. Some of the antineuralgic drugs, which will be noticed presently, may also be used concurrently. Some of them, especially phenozone and butyl-chloral, have often seemed to me to do good in the way of rendering the massage more tolerable. Without massage these drugs may be palliative, but they are never curative, as they are in neuralgia due to causes other than fibrositis.

It would be easy to multiply instances of the manifestations of the 'rheumatics' as they occur in various parts and structures, but no good purpose would be served by so doing. The essential points to remember are that these manifestations are due to inflammation of white fibrous tissue; that they may be acute, subacute or chronic; that they are seldom or never accompanied by constitutional disturbance; and that they are very amenable to treatment, more especially by iodide of potassium internally; and externally, by massage, passive movements and stimulating applications.

NEURALGIA.—Pain which follows the distribution of certain nerves is a very common disorder. It may, as we have just seen, be due to fibrositis; but, so far at any rate as the smaller nerves are concerned, it is much more often due to other causes. Chief among

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these are unsatisfactory blood states. That neuralgia is the cry of a nerve for healthy blood is an oft-quoted saying, and certain it is that undue toxicity of the blood, from whatever cause arising, is an important, as it is certainly the most common, agent in the causation of pain. For toxins in the blood act not only by direct irritation of a nerve, but they also act, as in gout, by causing vaso-constriction, thus depriving the nerve of its due quantity of nutritive material. Burney Yeo suggests that a factor of an opposite kind is not infrequently in operation—namely, that the blood state may give rise to vaso-dilatation, and that it is a kind of blushing in the neighbourhood of the nerve which determines the pain.[1] However that may be, all that it is necessary to realize is that impure blood is the most important cause of neuralgia, and that it may produce this effect not only directly, but also by interference with the normal vasomotor mechanism. Another cause, scarcely less in importance, is the existence of an irritant causing fatigue of the involved nerve.

The presence of a neuralgia, then, should suggest—(1) a fibrositis, (2) an unsatisfactory blood state, and (3) the existence of an irritant. With the first I have already dealt; there remain, therefore, the other two to consider. Of unsatisfactory blood states the commonest is surely anæmia. Whether this be due

[1] See also 'The Vasomotor Factor in the Pain of Migraine,' by Dr. Francis Hare, *Clinical Journal*, January 24, 1906.

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to convalescence from acute disease, to mere chlorosis, to deficient coagulability of the blood,[1] or other cause, it is very frequently attended by neuralgia, more especially about the head and lower part of the trunk on one side.

The treatment of such cases resolves itself into the treatment of the anæmia by suitable hygienic, dietetic, and medicinal means. So far as hygiene is concerned, an out-of-door life in a bracing climate is strongly to be advised. The diet should be generous, including meat foods and wines—preferably a good Bordeaux or Burgundy—and plenty of fats. Fats seem to be concerned in some very special manner with the nourishment of the nervous system, and in the form of butter and cream they may be freely given to such patients as we are now considering. The best medicine is undoubtedly iron, but the stronger salts, the sulphate and perchloride, are much less efficacious than the citrates and tartrates. The two latter are readily assimilated, whereas the former are very apt to upset the stomach. A useful formula is as follows:

℞. Ferri ammon. citrat. ... ... gr. x.
Liq. arsenicalis ... ... ♏iii.
Inf. quassiæ ... ... ad ℥ss.
M. Sig.: Ter die post cib.

As the patient's strength improves it may be desirable to substitute the following:

[1] Ross, *Lancet*, January 20, 1906.

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℞. Ferri quin. citrat. ... ... gr. xx.
Liq. arsenicalis ... ... ♏v.
Tr. nucis vom. ... ... ♏iv.
Aquam aurant. flor. ... ... ad ℥ss.
M. Sig.: Ter die post cib.

The presence of quinine, even in such doses, may help to subdue the neuralgia. When giving iron in any form and for any purpose, it is of the utmost importance to keep the bowels open. This is best done by means of aloes at first, because this drug enhances the effect of the iron, and later by cascara. A daily morning dose of a natural mineral water is also very useful.

But where the neuralgia is an obtrusive feature of the condition, it is generally necessary to prescribe something which has a direct influence upon the pain when this occurs. In anæmic cases and in all those in which defective nutrition is pronounced I have had better results from quinine and gelsemium than from any other combination.

℞. Quin. mur. ... ... gr. v.
Acid. hydrobrom. dil. ... ... ♏xx.
Tr. gelsemini ... ... ♏x.
Aquam chloroformi .. .. ℥ss.
M. Sig.: Every twenty minutes till pain ceases. Not more than four doses to be taken.

This mixture, like most others where the relief of pain is concerned, acts better in small doses repeated at short intervals than in single large doses.

The state of the blood in goutiness is such as to

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be highly provocative of neuralgic pains. Inasmuch as this condition and its treatment are fully considered in another chapter, it is here only necessary to emphasize the advisability of examining for high arterial tension in all cases of neuralgia, and where this is present, to point out the value of iodide of potassium in the treatment of the accompanying neuralgia. As this is the most potent of all drugs in counteracting the gouty state generally, a gouty neuralgia ought very readily to yield to the measures proper to the treatment of the blood state itself. Occasionally, however, it does not, and then it is well to have recourse to the following combination:

℞. Sodii salicylat. } ... ... āā gr. v.
Phenazon }
Syr. zingiber. ... ... ʒi.
Aq. chloroformi ... ... ad ʒi.

M. Sig.: Every quarter of an hour until pain ceases. Not more than four doses to be taken.

This is a most admirable combination in the migrainoid neuralgic attacks to which the gouty are peculiarly prone. I have appealed to it in a very large number of cases, and so far never in vain. For a reason which it does not seem possible to explain, the combination of these two drugs is infinitely more effectual than either given alone. When directed to be taken as above, the mixture acts better than in single large doses.

A fruitful and easily overlooked cause of neuralgia, especially in women, is the toxic blood state induced

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by chronic constipation. This must be treated by the curing of the vicious habit on the lines laid down in Chapter III.; but here again we may have to treat the neuralgia concurrently with the treatment of the constipation, in which case the phenozone and salicylate mixture just described will usually be found the most useful, though quinine and gelsemium are to be preferred where, in consequence of the long duration of the constipation, the patient is anæmic and emaciated.

Neuralgia is considered by some as a hysterical manifestation. This, of course, it may be, though hyperæsthesia is less characteristic of hysteria than anæsthesia. Neuralgia certainly occurs frequently in neurotic women, but I have generally found that there is some discoverable and removable cause for the neurosis of which the neuralgia is an occasional manifestation, and this cause is more often than not a peripheral irritation, of which the origin is to be found in the teeth, the ears, or the eyes. Such irritation, when acute, is a recognised cause of neuralgia in those who are not neurotic, and there is no difficulty in supposing that, when chronic, it may give rise to that nervous instability to which the term neurotic is applied. A common site for such irritation is the ovarian region. Examination of this region in neurotic women will often reveal pain on pressure over one or both ovaries, in which case infinitely the best drug to use is belladonna. It is usefully combined with phenozone, and its adminis-

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tration should always be accompanied by the application of blisters, small in size, but frequently repeated, in the region where the pain has been elicited.

A practical point of considerable importance in connection with the management of these cases is characteristically expressed by Goodhart, in that altogether admirable little work 'Common Neuroses' (which should be carefully read by every young practitioner) in the following passage:

'I have said it is a bad day for a man when he first knows he has a heart; it is a ten times worse day for a woman when the pelvic pains to which so many are subject are focussed for her by medical opinion upon uterus or ovary. If there is anything which curdles my blood, it is to hear a woman talk of her ovaries as she might of some intimate acquaintance.'

In the manufacture of incorrigible neurotics the word 'ovarian,' blurted inadvertently from incautious lips, is a common and potent ingredient.

Irritation within the buccal cavity is a frequent cause of facial neuralgia; and it should be remembered that it is not only teeth which are obviously carious which may produce this result, but, as Savill[1] points out, careful examination, by tapping the teeth, or by the application of hot and cold liquids alternately, will often reveal the existence of an irritated pulp in an apparently sound tooth, the proper treatment of which is necessary to a cure. For the relief of neuralgia of facial or cranial distribu-

[1] 'A System of Clinical Medicine,' vol. ii.

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tion arising from such a cause butyl-chloral is probably the best of all internal remedies. It should be given in pill form, 5 grains every half-hour until pain ceases; not more than six pills to be thus taken. It is usefully combined with gelsemine, which is another drug with a selective influence over cranial neuralgias. For this purpose the pil. butyl-chloral c. gelsemina (Martindale) is very useful. Local applications are not usually accounted of much value in facial neuralgia, but I have found that the lin. aconiti carefully painted with a camel-hair brush over the area occupied by the pain is not only helpful in assisting the action of drugs taken internally, but that it is in some cases sufficient of itself to cut short an attack. For the vague, ill-defined neuralgic and 'rheumaticky' pains of which people not infrequently complain, I have found chloride of ammonium, 20 grains, combined with tr. cimcifug., 20 minims, more effectual than any of the above-mentioned remedies.

One of the most valuable drugs for the relief of neuralgic and neuritic pains, wherever situated, is acetanilid (antifebrin). In spite of its undoubted powers in this direction, even where such pains as those of tabes are concerned, it has of late fallen into disuse. This has been due in a large measure to the fact that it is credited with the production of untoward effects. This is in reality only partly true. When properly employed, it is no more dangerous than any of the numerous drugs which daily flow, freely and callously, so to speak, from the point of

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the prescriber's pen. First, then, as to dose. The old official dose of 10 grains is too high, at any rate, to start with. It is better to begin with 2 grains, which will in many cases be found sufficient. If not, the dose may be gradually increased to 10 or even 15 grains. It should not be increased above the latter if, the physiological effect having been produced, the pain fails to yield. This physiological effect is slight cyanosis. The lips and nails become a dusky red. This effect has in a great measure been responsible for the disuse into which the drug has fallen. There is nothing alarming about it, and it is necessary to remember that, as in the case of so many other drugs, the curative virtues of acetanilid very often decline to show themselves until this physiological effect has been evoked. These facts seem worth insisting upon, because, apart from morphia, acetanilid is in my judgment by far the most powerful anti-neuralgic at our disposal. It will relieve the pains of locomotor ataxy and of other organic diseases of the nervous system when nothing else will, and he who allows himself to be frightened by the occasional cyanosis which it causes, deprives himself of a most valuable therapeutic agent. That its use requires a certain amount of caution is not a sufficient reason for abandoning it. Acetanilid being practically insoluble in water, is best given in cachet, combined either with salicylate of sodium (10 grains) or camphor monobromat (6 grains).

It is scarcely necessary to mention morphia as an

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anti-neuralgic, except to say that it is not employed as often for this purpose as it might be. It is, of course, most undesirable that its use should be prolonged, but there is no objection to exhibiting it for the relief of pain, pending the action of other remedies. For the intense neuralgia which sometimes accompanies true influenza and other acute toxæmias it has no equal. Its use in recurrent neuralgias is undesirable, not only on account of the patient, but also for the sake of the practitioner, who, unless he is careful, will find himself urgently summoned at all hours of the day and night to administer the necessary dose. This, which is unsatisfactory enough, is on the whole preferable to entrusting, as is too often done, a needle and a bottle of tabloids to the all too willing patient.

Another unduly neglected means of relieving neuralgic pains, in suitable cases, is leeching. One would not, of course, recommend it in weakly, anæmic subjects, but in full-blooded individuals the relief it gives often approaches the miraculous. This is especially true where the pain seems to be in, or to radiate from, the ear. A leech placed behind the ear and allowed to take its full quantity of blood will often give complete relief where other means have failed.

HEADACHE.—There remains to be considered a highly important peripheral irritant, perhaps the most important of all in the causation of neuralgia, which I have left to this stage that I might discuss it in associa-

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tion with headache, to which it also gives rise with great frequency—namely, eye-strain. Where eye-strain is concerned neuralgia and headache may be regarded as synonymous terms, for it is impossible to be certain where the one ends and the other begins. And I may say at once that these two conditions by no means exhaust the troubles to which eye-strain may give rise. It is, as we shall see presently, a frequent, though too often unsuspected, cause of neurasthenia, melancholia, intemperance, and drug habits, to say nothing of such minor matters as irritability of temper, dyspepsia, constipation, and 'sluggish liver.'

The first point to remember in connection with eye-strain—and it is one upon which it seems very necessary to insist—is that the condition is produced, not by gross defects, but by slight ones; not by high degrees of errors of refraction, but by minor ones.[1] So much is this the case that patients are often indignant that any aspersions should be cast upon their eyesight, which, they will protest, has always been exceptionally good. And the truth is that such patients *are* able to see as well as anyone, for the reason that, the defect being slight, it has always been well within their power, by contracting the ciliary muscle, to overcome the defect. In the case of those with gross defects no amount of ciliary contraction enables them to see clearly, and so the effort, even if it is ever made, is very early abandoned.

[1] See 'Refraction of the Eye,' by Ernest Clarke (Baillière, Tindall and Cox).

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In the case of those with minor defects the difficulty arises from the fact that it is no more possible to keep the ciliary muscle contracted for hours on end than it is to keep any other muscle in the body so contracted without giving rise to fatigue. Especially does this apply when astigmatism is present, as the ciliary muscle is then contracted not only continuously, but also irregularly. The difference between the ciliary and other muscles is that in the latter the symptoms of fatigue are easily recognised as due to fatigue, but in the case of the eye, so long as the vision remains unimpaired, the seat of origin is almost certain to go undetected. The patient sees well, but in the majority of cases, he does so at a cost which, physiologically speaking, he cannot afford to pay. He lives well up to the limit of his nervous income, and any slight unexpected attack will very readily project him into bankruptcy. It is when he has reached this state that he appeals to his doctor to be relieved of a headache or an attack of neuralgia. For, be it remembered, the pains which are caused by eye-strain are by no means always present; frequently—indeed, generally—they require some extraneous cause to provoke them. As long as the patient is permitted to pursue the even tenor of his way, he is able to live within his income and keep his enemy at bay; but no sooner is that even tenor disturbed, as by worry or an over-generous dinner, than he finds himself at the end of his resources, with his enemy at his throat. The factor

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which in a very large number of cases supplies the disturbing element is the advance of time. As long as a man is young and vigorous his nervous income is equal to almost any strain, but as years wear on this income gradually diminishes, and as he approaches the presbyopic age, when another disturbing element awaits him, he is always more or less on the margin of symptoms. When the presbyopic age is actually reached, and the lens has lost a great deal of its original elasticity, the ciliary muscle has still more work thrown upon it, and consequently such symptoms are liable to be of very frequent occurrence.

The nature of these symptoms varies within very wide limits. Neuralgia and headache, with which we are for the moment especially concerned, take the first place. Neither the distribution of the neuralgia (except that it is generally cranial) nor the type of the headache, affords any indication that it is the eyes which are at fault, so that it is all the more important to keep constantly reminding ourselves of the now well-established fact that where either of these symptoms cannot be traced to any obvious cause, eye-strain is, in all probability, the main factor in their production. Another common effect of refractive errors is giddiness. This is liable to occasion very considerable alarm to patients, who are generally afraid that it indicates intracranial mischief. To medical men it generally suggests gastric disorders, aural troubles, or circulatory disturbances. These are

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all common causes, but probably the most common, especially in people about middle life, is that which is least frequently remembered—namely, ocular defects, which are slight, and therefore unsuspected by the patient.

Nausea and vomiting, as we have already seen (*vide* Chapter III.), are often due to eye-strain. In these cases, as in most others, it is to be remembered that something more than eye-strain itself is generally required to precipitate an attack. That something is often so slight a matter that it altogether escapes notice unless the presence of eye-strain, acting as a chronic underlying irritant, is realized. In all these cases it is the summation of slight stimuli which produces the effect, and of these slight stimuli that which is constant and ever present is the one whose removal is important. With that gone the others cease to be operative.

But the manifestations of eye-strain are not all so definite as the foregoing.[1] The condition, indeed, expresses itself even more frequently in forms, which, until we are familiar with its almost unlimited capacity for producing indefinite symptoms, are very difficult of recognition. 'The Autocrat of the Breakfast Table' says that it is better to lose a pint of blood from your veins than to have a nerve tapped. Now, that is precisely what eye-strain does: it taps

[1] See 'The Medical Aspect of Eye-Strain,' by Ernest Clarke, *Clinical Journal*, October, 1905. 'Eye Strain as a Cause of Headache,' by L. H. Jessopp, *Practitioner*, July, 1906.

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a nerve. The energy runs to waste, and the whole cerebro-spinal system becomes exhausted. When once the outline of this picture is clearly discerned, it is by no means difficult to fill in the detail. For cerebro-spinal exhaustion, though it has no symptoms by which it may with certainty be recognised by the doctor, has a very real existence for the patient. In its slighter degrees it may mean no more than the deprivation from a particular viscus, say the stomach, of its fair share of nervous energy, leading to dyspepsia; or it may spell an evident want of control in the higher cerebral centres, causing irritability of temper, undue emotionalism, or a craving for stimulants. In more pronounced degrees it will cause the grouping of symptoms to which the term neurasthenia is applied. It may cause hysterical ebullitions, and may even be responsible for epileptic attacks. In degrees still more pronounced it may lead to melancholia, and even to suicide. There is, in short, no functional disturbance of any portion of the central nervous system which may not own eye-strain as its essential cause, so that it is impossible to insist too strongly upon the importance to every practitioner of being able to detect slight errors of refraction. Into the details connected with the necessary examination it is impossible to enter here, but the following hints may serve as a useful guide.

1. *Objective Examination.*—(*a*) Defects of vision may be suspected if the patient screws up his eyes or places his head on one side in order to

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read or to see some object at a distance. If there is a hyperæmia of the margin of the lids, generally the upper lid, an error of some kind is usually the cause; and if a patient under forty years of age presents an arcus senilis, especially if one eye only be thus affected, it is almost certain that the premature degeneration has been brought about by eye-strain of some kind.

(*b*) When the eye is examined by the *indirect* method with a concave mirror and focussing-glass, **Hyperopia** is present if the disc is larger than usual, and appears to diminish on withdrawing the glass from the eye; **Myopia** is present if the disc is smaller than usual, and seems to enlarge on withdrawing the glass; and **Astigmatism** is present if the disc is oblong and appears to alter in shape on withdrawing the focussing-glass.

(*c*) By *direct* ophthalmoscopy. **Hyperopia** is present if convex glasses improve the view of the fundus; **myopia,** if concave glasses do so; and **astigmatism** shows itself by parts of the fundus being out of focus, while other portions at right angles are in focus.

2. *Subjective Examination.*—**Hyperopia** is probably present if the patient's vision is not made worse by convex glasses; **myopia** is suspected if the patient's reading distance is nearer than normal; and **astigmatism,** if the patient can read some of the letters in the lowest line of the distant type, but makes mistakes even when reading a line half-way down; or if, when looking at radiating lines, put at a distance

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of 4 to 6 metres, some of the lines look blacker than others.

It must, however, be distinctly borne in mind that if the patient is not under the influence of a cycloplegic, these tests, if *negative*, prove nothing, as he may be, and probably is, involuntarily correcting his error.

Eye-strain is, however, by no means the only kind of chronic peripheral irritation which may give rise to headache. Dental troubles which fall short of gross caries, frequently produce it, overcrowding of the mouth, owing to eruption of the wisdom teeth, being a common and often unsuspected cause. Impairment of respiratory power, brought about by obstructions in the nose and throat, are other easily overlooked causes, chief among them being deviations of the septum and other factors acting upon one nostril only. Aural troubles of every sort should always be carefully examined for.

A form of headache which presents special features, and concerning whose ætiology there has been a great deal of speculation, is *migraine*, or hemicrania. The latter name is applied to it because the pain generally begins on one side of the head, and is sometimes confined to that side throughout the attack. The characteristic of migraine is its periodicity. The attacks recur at intervals, though not necessarily at regular intervals, and their origin is exceedingly difficult to trace. Migrainous people, like epileptics, are always more or less liable to an attack, and, like epileptics, they have premonitions ;

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they know the sort of influence which may affect them, and immediately after an attack they know that they will enjoy immunity for a variable time. The attacks usually begin, significantly enough, with some ocular phenomenon, such as flickering lights of various forms and zigzag lines of colours in different parts of the field of vision; then follows an intense headache, accompanied generally by nausea, vomiting, and extreme prostration, which may last for varying periods. At the end of forty-eight hours the patient is generally well again.

To understand the phenomena presented by migraine we have, as in epilepsy, to assume some underlying instability of the nerve-centres, which are provoked into a stormy condition by stimuli which leave ordinary individuals unaffected. The attacks are common in the studious, in the sedentary, in the highly cultured, and are rare in the bucolic. In the light of what has been said above on the question of eye-strain, and the capacity of this condition to produce a disturbance of nervous equilibrium, coupled with the fact that migrainous attacks are almost invariably accompanied by ocular phenomena, very special care should be taken to eliminate this element in every case. A very large number of people have slight defects of vision, and such slight defects, while harmless to the peasant of robust organization, may very readily provide a constant irritant to the studious of delicate organization, and thus contribute a powerful underlying cause for

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the attacks. A migrainous person should be examined very minutely by physician, oculist, aurist, and gynæcologist, and any defect in any department, however slight, which could possibly act as a cause of irritation, should be removed. The physician should pay particular attention to the cardio-vascular system, the oculist to the state of the refraction, and the aurist to any remediable errors in the ear, throat, or nose. If nothing abnormal can be discovered, then we are reduced to attempting to lessen the general nervous reactive sensibility by hygiene, diet, and the exhibition of bromides. A country, open-air life, a diet free from stimulating foods and alcoholic drinks, and the bromide of ammonium in 10-grain doses, three times daily, for a week every now and again, will very often keep the enemy at bay. During the attacks rest and a darkened room are essential. When taken in time—that is, before the attack has had time to develop—the phenozone and salicylate mixture above prescribed (see p. 132) will often—indeed, generally—act admirably. I have found it superior to phenacetin (10 grains), in which some people, however, express great confidence.

Upon headache as a symptom of *intracranial mischief* it is unnecessary to dwell. When the pain, as in migraine, is accompanied by vomiting, the fundus oculi should always be examined for anything suggestive of optic neuritis, and careful search should be made for other physical signs of organic disease in the nervous system. Intracranial tumours and

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meningitis are causes which should always be borne in mind.

There is a certain class of headache which is occasionally described as *congestive*. The term is misleading, because headaches due to a diversity of causes might legitimately be so called. If, however, we qualify the term by the adjective 'mechanical,' it is possible to recognise a separate and distinct group. Headaches due to mechanical congestion are produced by factors which are easily overlooked. Anything which interferes with the proper circulation of the blood may occasion them, and in ordinary life tight corsets in women and tight collars in men will be found to be common causes. This type of headache, which is described as a general fulness, aggravated on stooping, may be the first indication of the existence of a lesion at the mitral valve, so that a complaint of such a nature, more especially when it is accompanied by a history of epistaxis, should always lead to a careful examination of the cardiac area.

Nasal obstruction, whether from enlarged tonsils, adenoids, or deviations of the septum, is exceedingly likely to cause headaches of the congestive type. The two former are nowadays very readily recognised, and very promptly—perhaps too promptly—removed, but the latter is often allowed to continue unremedied. Nasal deformities constitute an exceedingly common cause of headache in adults, and as they are nowadays easily remedied, there need be no hesitation in advising their radical cure, even

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in people who have passed middle life. The correction of these deformities must be left to the expert, but I would suggest that the most speedy, complete, and lasting benefit is to be obtained from the recently introduced method of submucous resection, by which the cartilaginous and bony obstruction is entirely removed, leaving a fleshy septum, an intact mucosa, and a clear air-way.[1]

Headache is very often caused by *change of climate.* The removal of a person from sedative to bracing conditions, and, even more frequently, *vice versâ*, commonly brings about changes in the vascular pressure, which, in the absence of adequate reactive power in the individual (in the convalescent, for example), very frequently cause headache and depression of spirits. If these symptoms do not pass off in a few days, it may be necessary to resort to treatment. Where the headache has been induced by relaxing climatic conditions, a mixture containing 2 grains of quinine and 5 minims of liq. strychnin. will generally do all that is necessary. Where, on the other hand, the climate is 'too strong,' as the expression is, 10 grains each of the iodide and bromide of potassium three times a day will be found useful. In each case the mixture should be preceded by a dose of calomel.

[1] St. Clair Thomson: Proceedings of the Laryngological Society, London, May and June, 1904; Transactions of the Clinical Society, London, October 25, 1905; *Lancet*, June 30, 1906.

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Pain in the head of a superficial character, such as seems confined to the scalp, is a frequent accompaniment of '*colds*' *in the head.* In such cases the pain is usually due to a fibrositis of the tissues overlying the skull, and is to be treated on lines already suggested.[1] Headache is a common symptom of *neurasthenia.*

Most headaches are due to what are comprehensively described as *blood-states.* A good instance is supplied by chlorosis, in which the headache is due to the abnormal condition of the corpuscular elements; and the same is presumably true where the symptom appears in leukæmia and other associated conditions.

The offending blood-state in the majority of cases is, however, a toxæmia. There are numerous familiar instances of this. All the specific fevers are liable to be ushered in with a headache more or less severe, and the poisons of alcohol and lead almost invariably cause the symptom. Among the toxæmias due to defective excretion, kidney disease and diabetes are classical instances of causative factors, while chronic constipation is probably both the commonest and the most generally overlooked. In all these cases the discovery of the cause immediately points the way to the proper treatment, and some people have endeavoured to aid in the discovery of the cause by mapping out certain cranial areas in which pain occurs, and attaching to each area a particular group

[1] See Chapter I.

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of causes. Thus, pain which is mainly vertical is said to be due to the following: anæmia, hysteria, neurasthenia, epilepsy, and disease of the uterus or appendages. A headache which is chiefly frontal is deemed gastro-intestinal, renal, ocular, syphilitic, or myalgic. An occipital headache is considered suggestive of intracranial mischief and spinal irritation. While believing a great many of these to be fanciful, I think there is no doubt that headaches due to defective elimination, such as those caused by uræmia, diabetes, constipation, and impure atmospheres, are generally frontal, and that those which appear in functional nervous troubles seem to have a preference for the vertex; but even in such cases it is not wise to attach much importance to so variable an element as the site.

In everyday life it is certainly the toxins of gastro-intestinal origin which are most frequently responsible for the occurrence of headache. These toxins generally act by interfering with the intracranial vaso-motor mechanism, causing now undue contraction, and anon, undue dilatation, of the cerebral vessels. The indications in either case are the same—namely, to cut off the supply of the toxins, and to promote the excretion of those already absorbed. The means of doing this are fully discussed in the chapter on Goutiness, so that here it is only necessary to emphasize the importance of dietetic simplicity, such as absence of meat foods and alcoholic drinks, and of excretory vigour by means of purgatives

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and diuretics. Stress may, perhaps, be laid on the importance of the latter, which seem very generally to be neglected. The salts of potassium, especially the iodide and citrate, are most useful, but the best of all renal stimulants is undoubtedly theobromine. Some physicians, who are possessed by the uric acid bogey, object to this drug on account of its close relationship with xanthine and the other purin bodies. An over-curious regard for these would, however, lead also to the condemnation of caffeine, whose efficacy as a heart tonic in suitable cases is second only to that of digitalis.

Whatever its connection with other bodies with the radical C_5N_4, and however dangerous such a connection may seem theoretically to be, there can be no doubt that theobromine is the most active renal evacuant we possess, and it may be prescribed with every confidence in all cases where we are desirous of ridding the system of a toxin, such as a nitrogenous toxin, which is normally disposed of through the kidneys. It is best given in cachets of 15 to 20 grains three times daily. It occasionally operates as a drastic purgative, in which case the dose must be lessened. Some people prefer to give it in the form of 'diuretin,' in which it is combined with a salicylate.

In addition to general evacuants, it is generally desirable to prescribe measures directed to the relief of symptoms. Where there is reason to suppose that the headache is due to vaso-constriction, liq. trinitrini

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is very useful. Its effect, however, is transitory, and it should not, for obvious reasons, be frequently repeated. It is best given in conjunction with hydrobromic acid—thus:

℞. Liq. trinitrini ... ... ♏iv.
Acid. hydrobrom. dil. ... ... ♏xx.
Aquam ... ... ad ℥ss.
M. Sig.: Ter die.

Another useful drug for the symptomatic treatment of headache is cannabis indica. If given as the tincture, in combination with other drugs, it must be suspended in mucilage; it is, therefore, better to give it separately in the form of extract, of which from ½ to 1 grain may be made into a pill with lycopodium and given three times daily.

G. W. Ross, in a valuable paper contributed to the *Lancet*,[1] describes a chronic headache which shows itself as a dull, heavy ache, worse in the morning and tending to wear off as the day advances, and accompanied by mental and physical lassitude. This, he says, is associated with deficient coagulability of the blood, and yields readily to the exhibition of chloride of calcium (see Chapter VIII.).

In very persistent headaches which resist all treatment, it is well to try the effect of a blister on the nape of the neck, to be kept open with savin ointment for a week or ten days on end. I have known this expedient succeed where other measures had failed.

[1] January 20, 1906.

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ADDITIONAL FORMULÆ.

For Neuralgia, especially when Intercostal, or due to Eye-strain.

℞. Phenacetin ... ... gr. x.
Caffeine citrate ... ... gr. v.
M. Ft. pulv. in cachet i. Sig.: Every two or three hours till pain ceases.

For Neuralgia, Migraine, and the Pains of Organic Nervous Disease and Menstrual Troubles.

℞. Pyramidon, gr. v. to viii., dissolved in water, three times daily.

Hypnotics (Whitla).

(*a*) ℞. Paraldehyde ... ... ʒi.
Mucil. acac. ... ... ʒii.
Syr. simpl. ... ... ʒii.
Aquam cinnamom ... ... ad ʒ ii.
M. Sig.: To be taken at bedtime.

(*b*) ℞. Lupulini ... ... gr. iii.
Camphor ... ... gr. iii.
Ext. hyoscyam. ... ... gr. iii.
M. Ft. pil. ii. To be taken at bedtime.

(*c*) Sulphonal (gr. xx.), Trional (gr. x. to xxx.), and Veronal (gr. v. to x.) are all valuable hypnotics. They should, however, be accompanied by appropriate remedies when the sleeplessness is due to pain.

(*d*) Bromidia (Battle) is a useful hypnotic. It contains chloral, potassium bromide, and cannabis indica.

Local Applications.

(*a*) ℞. Lin. aconite } ... ... āā ʒii.
Lin. chloroform. }
Sig.: To be gently rubbed into the painful part in myalgia or other fibrositis.

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(*b*) Dr. G. H. Kenyon strongly advocates the local application of tartarated antimony in lumbago. The ung. antimon. tartarat. is thoroughly rubbed into the part twice daily, if necessary, until the characteristic pustules make their appearance (*British Medical Journal*, January 13, 1906).

(*c*) Antiphlogistine (Denver Chemical Manufacturing Company) is a convenient and, in some cases at least, a very efficacious form of stimulating local application. Over poultices it has the great merit of cleanliness and asepticity ; to fomentations it is to be preferred in that it need only be applied once in twenty-four hours. It contains *inter alia* glycerine, boracic and salicylic acids, eucalyptus and iodine.

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CHAPTER V.

GOUTINESS.

GOUTINESS is a sufficiently common and sufficiently well-understood term, but inasmuch as it is also a very elastic one, I must begin by explaining the limitations which are here applied to it. First of all, then, we must exclude acute articular gout and those forms of subacute gout, such as tophaceous, as are usually described. Neither need we consider such conditions as renal and hepatic calculus. These are, in many cases at any rate, truly gouty in origin, but they are also in the nature of classical complaints, whose symptoms, diagnosis, and treatment are fully set forth in standard works. With these exceptions the whole field of troubles caused by the gouty diathesis is open to us, but I may as well say at once that I do not propose to try and exhaust it; I shall, however, endeavour to include the most important points, and shall seek to lay stress upon those which seem to me to require emphasizing.

In considering any question connected with gout, one is immediately brought face to face with

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the numerous and very divergent theories which have been expressed on the subject of its causation by very competent observers, and one finds one's self forced to confess that very little is really known concerning it. Fortunately, however, that does not prevent us from obtaining a very fair workable estimate of it from a clinical standpoint, nor from being able to treat it with a measure of success. Gout, it is generally agreed, is due to insufficient or perverted metabolism, leading either to the formation of material which is foreign to the health economy, or to the inadequate discharge of normal excreta. Whichever of these views is correct matters nothing for our purpose. What we have to realize is that there is a something circulating in the blood which, in its endeavours to escape, may project itself, so to speak, upon any organ or tissue, and that the form which the gouty manifestation will assume will depend upon the organ or tissue selected. What determines that selection in any particular case it is quite impossible to say. Thus the 'something' may project itself into the neighbourhood of joints, causing a chronic gouty arthritis; it may project itself into the sheaths of nerves, causing a gouty neuritis; it may project itself on to the integument, to cause a gouty eczema, a gouty psoriasis, and, what is contrary to general belief, a furunculosis. It may attack the air-passages to cause pharyngitis, laryngitis, bronchitis, or asthma; it may find its way to the stomach and cause dyspepsia; it may select the brain and give

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rise to irritability, somnolence, and disinclination for work; it may provoke a cystitis, and, according to some, even a urethritis. There is, in fact, no part of the body which can be said to be free from the liability to invasion by the gouty poison, and fortunate indeed is he who, being obliged to suffer manifestations of the diathesis in any situation, suffers them in some painful and easily recognisable shape rather than in the painless, insidious, but far more inexorable, forms of arterio-sclerosis and kidney disease.

The main thing, then, to remember about gout is not to forget it. In the presence of a disturbance of any sort, in any part of the body, it is wise to ask ourselves the question 'Is this due to gout?' Many of us who do not forget the question are, perhaps, too liable on insufficient grounds to answer it in the affirmative, but such an attitude is less liable to lead to disaster than omission to remember it. The points upon which a correct answer to such a question depends are too numerous to enter into here. They involve such matters as heredity, habits, aspect, slight manifestations in other organs, and the like, which can in reality be acquired only by clinical observation and experience. There are, nevertheless, some points in connection with the condition of which the most experienced may profitably remind himself, some of which we will now briefly consider.

Gouty symptoms are rare before middle life, and when that period is reached they are commoner in

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those whose youth has been athletic. Our national pride in outdoor sports might well be tempered by the consideration that the habit of body which these sports engender is very apt to lead to gout in those who, having once indulged in them, are ultimately condemned to a sedentary existence. The boy is father of the man, and the man is apt to suffer if he is unable to continue the catabolic activity to which the boy has accustomed the organism. It is said that women do not suffer from gout. This is true only in so far as acute 'big-toe' gout is concerned; for women certainly suffer very frequently from irregular gout, especially in the form of headache, neuralgia, and bronchitis, and after the menopause they exhibit a very decided tendency to conform to the types, such as chronic arthritis, skin affections, and dyspeptic troubles, which are so common in men.

The chief cause of gout, in whatever form it may appear, is want of balance between intake and output. Either the intake is too great or the output is too small. Not infrequently both factors are in operation. So far as the intake is concerned, the excess is not necessarily one of quantity. Meat foods and alcohol, even when taken in what is usually considered moderation, by a predisposed person leading an inactive life, are very powerful producers of gout; and, in the same way, a man who takes a great deal of exercise may be very gouty if he indulges too freely in the pleasures of the table. The discovery of a gouty manifestation, then, immediately provides two cardinal indications:

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the one is to check the source of the poison, the other is to aid and hasten its elimination. The first of these is met by prescribing and insisting upon a suitable dietary; the second, by increasing metabolism and invoking the active aid of all the emunctories.

In the matter of diet the most important point is the reduction of the alcoholic drinks. Beers and wines in contradistinction to spirits are often spoken of as peculiarly productive of gout. It is no doubt true that the beer-drinker is more liable to gross and obvious forms of the malady than the spirit-drinker, but to argue from this that spirits are harmless to a goutily-disposed person is to play the part of the ostrich. Spirit-drinking, though it may not provoke arthritis or eczema, is in the highest degree calculated to cause arterial degeneration and granular kidneys, and these, though less strikingly, are no less truly gouty in origin than the others. That spirits, not being productive of gout, are therefore harmless and even 'wholesome' to gouty people is a heresy which would be ridiculous were it not so pernicious, and no words of condemnation are too strong for him who aids in its dissemination.

Alcoholic drinks of all sorts are in the highest degree harmful to the goutily inclined, and the larger the percentage of the contained alcohol, the greater is the harmfulness of the beverage. The first thing to do, then, with a gouty person is to make him, if possible, into a teetotaller. The 'ostrich' view of the question should be impressed

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upon him, and it should be brought home to him that it is practically impossible to check the manufacture of an article except by stopping the supply of the raw material.

If we have happily succeeded in this endeavour, our next care should be to convert him into something approaching a vegetarian; for after alcoholic drinks, the ingestion of meat foods takes the highest place in the production of the malady. In the time of our forefathers there was a saying that the gouty patient should have three meals a day—'one of fish, one of flesh, and one of neither.' This may be a useful formula for a recalcitrant patient, whom we are trying to persuade into the paths of physiological righteousness, but it is far indeed from being a counsel of perfection. The three meals of a person with definite manifestations of goutiness in any form (I am not now referring to such as are merely goutily disposed) should consist of one of fish or flesh and two of neither. Even the one of fish or flesh represents in the judgment of many a concession which it is sometimes necessary to make to the weaker brethren, for the less nitrogenous food of animal origin which a patient can be induced to take, the more rapidly and the more completely will he get rid of his troubles. There are, of course, nitrogenous foods *and* nitrogenous foods, and there seems no doubt whatever that those which, roughly speaking, are obtained without the sacrifice of animal life are less deleterious to gouty people than those which entail

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such sacrifice. For instance, milk, cheese, eggs, and the pulses (peas, beans, and lentils), though rich in nitrogen, are, compared to flesh, poultry, fish, and game, very poor in the constituents which help in the elaboration of the gouty poison. It is from the former, then, that the gouty patient should be encouraged to draw his nitrogenous supplies, and it should be made clear to him that, in the presence of a manifestation however slight, the latter will prolong the attack and militate against the action of remedial measures.

It used formerly to be believed that sugar was productive of gout. Although this is now very generally recognised as fallacious, there seems to be some measure of truth in it, inasmuch as sweets are very liable to upset the stomachs of gouty people. This they do more especially when introduced into that organ without having been thoroughly insalivated. Gouty people who are afflicted with a sweet tooth, as the saying is, should therefore be warned against indulging it unduly; and it should be explained to them how they may indulge it with the best prospect of doing so with impunity — namely, by efficient mastication.

Another question closely connected with diet, which has been engaging a considerable degree of attention during the last few years or so, is the part played by common salt in what we may call the indirect causation of many morbid conditions which are associated with faulty metabolism and insufficient excretion. It

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has been recognised since 1850 that the chlorides are retained in the body during acute illnesses, to be discharged *en masse* as soon as convalescence sets in. It has also been known for a long time that œdematous fluid contains a very large percentage of common salt, which is excreted by the kidneys as soon as the œdema disappears. Another fact which has been recognised for some time is that the amount of NaCl contained in the blood itself, is always the same under all normal circumstances, quite irrespective of the amount ingested—that is to say, if more is ingested the surplus is immediately excreted.

Now, Widal[1] has shown that in many conditions which are associated with renal inadequacy, of which goutiness may be taken as a type, the inadequacy first shows itself by an undue retention of chlorides. The common salt passes out of the bloodvessels into the tissues. Here it attracts to itself fluids, and œdema is the result. This œdema is at first visceral and deep-seated, so that clinically it is not easy to detect, except by careful comparative observations of the patient's weight. And, as one would suppose, among the first of the viscera to be attacked are the kidneys. They become œdematous, and, consequently, to their inadequacy in the matter of chlorides there is superadded a general inadequacy.

Thus it is that chlorides, though not poisonous in

[1] *La Presse Médicale*, June 29, 1908, and *Compt. Rend. Soc. Biol.*, 1904. See also *Treatment*, August, 1908, and an article in *The Practitioner*, August, 1905, by J. H. Bryant.

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themselves, very easily lead to the retention of other matters, and of these other matters, many are highly toxic. Widal has, in fact, shown that, in kidney affections, uræmic symptoms may be provoked or suppressed at will, by largely increasing or greatly diminishing the amount of common salt ingested.

In view of these facts, it is obvious that chloride of sodium constitutes a very grave potential danger to the goutily disposed, and we should be particularly careful to warn such against the habit of adding large quantities of salt to their food. For the same reason, highly salted foods, such as bacon and salt-fish, are better avoided, and those natural mineral waters which contain large quantities of NaCl—and a great many of them do—should not be recommended as habitual laxatives. Widal's work teaches us a further lesson of some importance—namely, that the amount of chlorides in the urine offers a very fair gauge of the functional renal capacity of the patient, thus helping us to a very early diagnosis of renal inadequacy.

Having by these dietetic regulations so arranged matters that the supply of the poison shall so far as possible be checked, our next care is to help in the disposal of that which has been already formed. To this end a vigorous appeal must be made to all the excretory organs for aid in ejecting the invader. Now, it is to be remembered that no appeal to the excretory organs is ever successful which is not accompanied by a liberal supply of fluids. An abundance of water

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is necessary to the action of each and all of them, and to ask them to excrete poisons without fluid is to ask them to make bricks without straw. It is said by those who wish to belittle the spa treatment of gouty conditions that this treatment is successful only because of the large quantities of fluid which the patients are made to consume. It is not necessary to give adherence to this suggestion in order to learn a lesson from it. If the ingestion of large quantities of water, as water, is beneficial at health resorts, it must be equally beneficial at home; and certain it is that if a gouty patient can be induced to take, say, from 2½ to 3 pints of water in the twenty-four hours, he is materially aiding his recovery in a most essential particular.

So much being established, let us see when and how the water is to be taken. First and foremost, it should be taken before meals, and not with or after meals. Half a pint may be taken half an hour before breakfast; about half a pint at 11 a.m.; the same quantity half an hour before luncheon, and again at 4.30 p.m.; before dinner a similar amount, and before bedtime a full pint. This is a large quantity, but if all the excretory organs are to be kept working vigorously, it is not too much. The question of how the water is to be taken, whether hot or cold, whether plain or with additions, must be left to individual tastes and peculiarities to decide. Some people will take water hot when they will not take it cold; some will take water in which tea has

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been infused, or to which some fresh lemon-juice has been added, when they will not take it plain; others, again, will attach virtues to a water poured from a bottle which they will deny to that which is drawn from a tap. These are largely matters of fancy on the part of the patient and of diplomacy on the part of the doctor; the only suggestions on the subject which I have to make are that still waters are preferable to sparkling waters, and that lightly mineralized waters are preferable to those which are strongly charged. Inasmuch as fresh lemon-juice is believed, by many observers whose opinion is entitled to respect, to have a beneficial influence upon some, at any rate, of the gouty manifestations, it is well to encourage its use; for even if it has no other merit—and, as will appear presently, I am one of those who believe that it has—it can certainly claim to render the dose more palatable.

Among drugs which possess a general influence in aiding the elimination of the gouty poison, iodide of potassium stands pre-eminent. There is no gouty manifestation which does not yield in a large measure to its intelligent employment—and by intelligent employment I mean its association with other drugs or measures specially directed against the particular manifestation present. The mistake which is usually made in connection with it is fear of large doses. The ordinary dose of 2 grains is much too small. If the drug is given at all, it should be given in doses which commence at 10 grains, and,

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curious though it may seem, the larger quantity is infinitely less liable to produce coryza and the other symptoms of iodism than the smaller.[1] If there is any suggestion of a rash appearing in consequence of its administration, a few drops of Fowler's solution added to the mixture readily prevents further trouble.

Another drug which is very valuable in counteracting the gouty poison, and one which resembles iodide of potassium in the fact that the exact nature of its working is still hidden from us, is guaiacum. The two may very suitably be given together in cachet form:

℞. Pulv. guaiaci } ... ... āā gr. x.
Potass. iodid. }

M. Ft. cachet. Sig.: One three times daily.

If the guaiacum causes purging, the dose must be reduced, or 5 or 10 grains of creta præp. added to each cachet. In any case the cachet should be followed by a draught of water. It is not desirable to give guaiacum in a mixture. Patients readily rebel against it on account of its unpleasant taste and objectionable consistence.

The salicylates, while regarded by some writers as excellent remedies in gouty conditions, are loudly condemned by others, notably in France. The objection urged against the salicylates, especially that of sodium, is that they are depressing and have an irritating effect upon the kidneys. There may be some truth in this, but my personal experience with aspirin (10 to 20 grains) has so far been quite

[1] See Chapter VIII., p. 275.

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favourable. It is, however, well to remember the renal charge which is, on the Continent, very actively brought against it. Many people complain that the salicylates are inert. When this is true, it will usually be found that they have been combined with alkalies, and I find, in point of fact, that the combination of salicylate of sodium and bicarbonate of sodium is a very favourite one. When salicylates are given they should be prescribed either alone or in conjunction with such a drug as nux vomica, which does not influence their chemical medium; for in the body they play the part of acids, and it is in virtue of this action that they do good.

Another acid whose virtues in the gouty state have recently been attracting considerable attention on the Continent is phosphoric acid. According to the experiments of Joulie[1] it would seem that gouty manifestations are due to the retention in the blood of matters whose escape is favoured not by alkalies but by acids, and the acid which he has fixed upon as most potent in this connection is phosphoric acid. I believe there is a large measure of truth in his contentions; at any rate, I have been successful in giving relief with dilute phosphoric acid where iodide of potassium and guaiacum had failed me.

Citric acid, in the form of lemon-juice, has often been lauded in the management of the gouty

[1] 'L'Acidité Urinaire,' par M. H. Joulie (*Revue Générale de Clinic*, Paris, 1901). See also 'La Médication Phosphorique,' Dr. Jean Nicolaidi (Paris, Octave Doin, 1904).

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diathesis. This drug, when taken in large doses—say ½ ounce in the course of the day—undoubtedly renders the blood more fluid by precipitating the calcium salts. What it does with these salts is a matter which still seems to await investigation; at any rate, they disappear from the blood, thus rendering the fluid more mobile and better fitted for its purpose of bathing and flushing the various tissues, and so promoting efficient excretion. I believe citric acid to be a most useful general corrective to the gouty tendency.

Having now paved the way for the efficient action of the excretory organs by ensuring for them an adequate supply of water, and having, by the action of the above-mentioned drugs, rendered the process of elimination more easy, let us inquire into the best means of setting these organs to work. So far as the bowels are concerned, if guaiacum is given, then the quantity in the above cachet may do all that is necessary. Where it does not, some purgative salts, preferably sulphate of magnesium, in doses of 30 grains, with nux vomica (*vide* p. 87), should be added to the morning dose of water, and also perhaps to the evening dose; or some of the natural aperient waters which are not overburdened with NaCl may be substituted.[1] Either course is much to be preferred

[1] Arabella water, which contains chiefly the sulphate and bicarbonate of sodium, may be said, for practical purposes, to be free from the chloride. It has therefore a special value in gouty cases.

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to the exhibition of cholagogue cathartics, which are so often recommended. There is no objection to an initial dose of calomel (say 2 to 3 grains): it is an excellent measure, especially in sthenic cases; but the practice of a sustained exhibition of hepatic stimulants is much to be deprecated. It was introduced in conformity with the theory that gout in all its forms was due to some dereliction of duty on the part of the liver, which could be counteracted by stimulation of that organ. As this theory is very far from being established, and as the continuous administration of cholagogues has well recognised drawbacks, the practice is not to be recommended. In gouty conditions the liver, together with all the portal radicles, require unloading, but this may be done quite efficiently with the mixture above prescribed, especially when this is occasionally reinforced by small doses of calomel (1 grain), podophyllin (½ grain), iridin (2 grains), or euonymin (1 grain).

The excretory organs to whose action the greatest importance is, in this connection, universally attached are the kidneys. It is my purpose to avoid as far as possible expressing an opinion about any of the theories concerning the causation of gout, but it is safe to admit that uric acid and the biurate of sodium are both in a measure actively engaged in producing the symptoms of the complaint; and as these substances are normally excreted by way of the kidneys, it is obvious that anything which tends to increase renal activity will materially aid the dis-

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charge of these matters, and thus lessen the incidence of the manifestations. The importance of fluid, which, as already stated, is considerable in the case of all the excretory organs, is here paramount, and water must therefore be exhibited in full quantities. As aids to its discharge by the kidneys rather than by any other route, it is well to have recourse to diuretics.

There are diuretics, such as digitalis and scoparium, which act by increasing the general blood-pressure, including that in the kidneys. As will appear later on, the blood-pressure in the gouty already rules over-high, so that such drugs are carefully to be avoided. The routine prescription of digitalis, bad as it is in cardiac disorders, becomes, in conditions accompanied by high arterial tension, something in the nature of a therapeutic crime. It increases the arterial tension and acts as a diuretic only when œdema is present. For diuretics in the gouty state, then, we must look to those which increase the renal activity without raising the blood-pressure—such, for example, as the salts of potassium, the infusion of buchu, and theobromine.

Fothergill says that buchu has upon the urinary passages the same inexplicable soothing influence which bismuth has upon the digestive apparatus. This I believe to be true, and it has often seemed strange to me that so valuable a drug should recently have fallen into disuse. It is by no means unpalatable, and it increases very conspicuously the functional activity of the kidneys. Of the salts of

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potassium, those which are most used are the citrate and bicarbonate. No one, I imagine, now gives these salts in the vain hope of increasing the alkalinity of the blood, so as to obtain the solution of uratic deposits; but whatever the motive with which they are given, there can be no doubt either that they exercise a beneficent action over the symptoms, or that they increase very materially the renal activity. It is probable that such merits as these and all other alkaline salts may possess are due mainly, if not entirely, to their action as diuretics; and that the salts of sodium, even though they be, as some are still found to maintain, wrong in theory, are useful in practice, owing to their possessing a similar eliminative action.

To insure the adequate discharge of the excreta from the kidneys, we have, then, to see, first, that enough fluids are being taken. The importance of this is so obvious that it seems absurd to dwell upon it, and in reality my only reason for so doing is to point out that the rule is liable to an exception. If there is too much fluid in the vessels, the urine is scanty because there is undue pressure in the kidneys. In such circumstances, to increase the amount of fluid ingested is to decrease the amount of urine excreted. If, therefore, after a few days the urine fails to increase in quantity, the fluids should be decreased until the urine flows freely. The next thing to do is to construct a prescription which will include such diuretic drugs as will assist

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in the discharge of this fluid by the renal route. If the cachet[1] be discontinued, we can include its most important ingredient, the iodide of potassium, in this prescription, which would then be as follows:

℞. Potass. iodid. ... ... gr. x.
Potass. citrat. ... ... ʒss.
Inf. buchu ... ... ad ʒi.
M. Sig.: Ter die.

If, as is not altogether infrequent, the patient be anæmic, 5 to 10 grains of the potassio-tartarate of iron may suitably be added to this mixture, which should be taken immediately after the three principal meals of the day.

There is another time-honoured drug which is not used as frequently in these conditions as it might be – this is spts. æth. nitrosi. When combined with citrate of potassium and acetate of ammonium, as in the following formula, it makes a very useful and agreeable mixture, increasing notably the flow of urine and acting, to some extent, as a diaphoretic.

℞. Potass. citrat. ... ... ʒss.
Spts. æth. nitros. ... ... ʒi.
Liq. ammon. acetat. ... ... ʒss.
Aquam ... ... ad ʒii.
M. Sig.: In a tumblerful of water three times a day.

In connection with spts. æth. nitros. it is important to remember that it must *not* be combined with iodide of potassium, as the result is an explosive mixture.

A diuretic of which Professor Huchard speaks in

[1] Page 166.

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the highest terms is theobromine. He prefers it to diuretin, in which it is combined with salicylate of soda, because he believes that the latter is very liable to irritate the kidneys. Of theobromine (which he prescribes in 10 to 15 grain cachets, three times daily) he says: 'It is one of the most powerful and reliable diuretics with which I am acquainted. It is by far the best medicament in all cases where we desire to increase the secretory activity of the kidneys, and I prescribe it all the more confidently because it does not increase arterial tension, nor has it any effect upon the strength or frequency of the cardiac contractions. It acts solely upon the renal secretory elements.'

The natural mineral waters of Contrexéville, Vittel, and Evian have very powerful diuretic properties, and may be prescribed with great confidence for all gouty patients. These waters can be obtained in bottles in this country, but it is infinitely preferable to send the patient to the spring itself, as there is reason to believe that a measure of their efficacy is lost either in the bottling process or in transit. Of these three places, Evian, situated on the Lake of Geneva, is much the most agreeable. It has a very fine bathing establishment, and its waters act very markedly in increasing the renal output.[1]

The next most important excretory organ is the

[1] See A. E. Wright, *Lancet*, April 2, 1904, 'On a New Method of Testing the Blood and the Urine, with Special Reference to the Excretory Efficiency of the Kidney.'

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skin. There are several drugs which increase cutaneous activity, chief among which is pilocarpine. This is a useful drug in many contingencies, and may occasionally be helpful in the gouty state, but the condition in which it is most generally recommended is precisely that in which it ought never to be employed—I mean uræmic poisoning. Pilocarpine induces not only a free flow of perspiration, but it induces also a great increase of bronchial, laryngeal, and tracheal secretion, and if the patient is partly insensible, these secretions may very easily choke him. Those who have a fancy for pilocarpine should reserve its use for patients who are conscious, and avoid it carefully in uræmia and other semi-conscious states.

In ordinary goutiness, however, the skin is best stimulated by means other than drugs. Pre-eminent among these stands muscular exercise in the open air. This should be sufficient, but not excessive; sufficient, that is, to induce free perspiration without, at the same time, giving rise to more waste products than the organs can conveniently deal with. When we are trying to dispose of an excess of a material we must be careful not to pursue a policy which may have for one of its results the production of that material, or a similar one, in increased measure. The nitrogenous waste which is produced by muscular exercise has to be excreted for the most part by the kidneys, and it is well that these organs, which already stand in need of stimulation, should have

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no more work cast upon them than is absolutely necessary.

A good substitute for muscular exercise is to be found in baths of various kinds combined with massage. These are undoubtedly best administered at a health resort, under the guidance of an experienced physician who is accustomed so to graduate them as to obtain the maximum benefit with the minimum of fatigue. Hot baths followed by massage may be administered at the patient's own house, but when this is done, careful instructions should be given as to temperature and duration. The temperature of the first few baths should not exceed 100° F., and their duration should be limited to ten minutes. Both may be cautiously increased until the one reaches 105° F. and the other twenty minutes. Each bath should be followed by massage or shampooing, and thereafter the patient should be swathed in flannels and encouraged to perspire by the administration of hot water. Such baths are, however, inferior to the hot wet pack which I shall presently describe.

Turkish baths, though excellent in many respects, have this against them: that very few, if any, of the establishments in which they are administered are adequately ventilated, so that the bather, especially when he is in the hot rooms, is breathing an atmosphere which is loaded with the cutaneous and pulmonary excreta of others. The home Turkish bath, of which there are now many patterns on the

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market, is not open to this objection; but, then, it is lacking in those agreeable elements of shampooing, douching, coffee, cigarettes, and gossip, which reconcile people to the discipline when administered in well-conducted establishments.

Of all the forms of bath obtainable under ordinary circumstances in large towns, that which I have learned to value most highly is the radiant-heat bath. The addition of light to the hot air certainly seems to confer upon the latter properties which in the absence of light it does not possess. At the Dowsing Institutes, of which there are now a great number all over the country, these baths are well and carefully administered. They may be followed by massage if so desired, but even without this addition, I know of nothing so well calculated to stimulate cutaneous activity and to bring about resorption of gouty deposits in properly selected cases.

Of routine household procedures nothing can compare with the hot wet pack. This is an old method, which has become unduly neglected. It is useful in a great variety of conditions, and as it is practically always available, I shall describe it in detail. All that is required is a mackintosh sheet, two ordinary blankets, a cotton sheet, a hot-water bottle, a pail of boiling water, and a wringer; all of which, except the last-named, can be obtained in an ordinary household. The wringer can be manufactured at short notice by hemming in enough of the two ends of a towel to allow a walking-stick to be passed through

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each end easily. The mackintosh is placed on the bed, and on top of it, the two blankets fully spread out. The sheet, having been wrung out of the boiling water, is then laid on the upper blanket. The patient is then placed on the sheet, so that his occipital prominence is on its upper margin. With the patient's arms raised, the upper corner of the sheet on his right side is carried across and tucked under his left scapula. With his arms by his sides, the opposite corner is brought across and tucked under his right scapula. Each blanket is then carried across in a similar manner, the hot-water bottle is placed near the feet, and the free ends of all the coverings are tucked under the heels. In a period varying from twenty to forty minutes perspiration will be found on the forehead, and that is the signal of sufficiency. The temperature taken in the mouth generally shows a rise of 1 or 2 degrees. After a tepid or cold sponging the patient is removed to bed, on which the coverings should not be too heavy. Two or even three of these packs may be given in a week. Patients, especially children, for whom they are very useful in many conditions, always enjoy them, and an intelligent nursery nurse can be taught to administer them quite satisfactorily.

The use of such means as are above indicated for stimulating the skin, derives its importance, not only from the point of view of excretion, but also from the point of view of vascular dilatation. One of the effects of the gouty poison (whatever it may be) is to

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irritate the bloodvessels, especially the arterioles and capillaries, causing their contraction, and thus giving rise to heightened arterial tension. Now, high arterial tension, if long continued, leaves its mark upon the vessel walls in the form of arterio-sclerosis, and ultimately, in the form of dilatation and relative insufficiency, upon the heart itself. The involvement of the coronary arteries in the sclerotic process may give rise to anginal attacks, and the inclusion of the renal arteries to cirrhosis.

But we need not multiply examples in order to realize the necessity for taking early steps to overcome the chronic contraction of the bloodvessels, which is the direct cause of the increased blood-pressure. The general measures, dietetic and medicinal, already indicated, especially the avoidance of meat foods and alcoholic drinks, together with the exhibition of mercury and potassium iodide, will in the long-run do much in this direction; but cutaneous stimulation by means of baths and massage causes prompt dilatation of the vessels over an enormous area, which lasts a considerable time, and may be repeated frequently; and the assistance in combating the condition to be obtained by such dilatation is the secret of a large portion of the success which attends the balneological treatment of these cases.

So much, then, for the management of the gouty state in general. Let us now consider how we are to treat the various symptoms of this state as they arise in different parts of the body. The most important

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are those which affect the joints, causing a subacute or chronic arthritis. When this arthritis is a legacy from an acute attack, its treatment, in so far as it differs from what has above been indicated, resolves itself into that which is laid down in all the text-books as proper to the attack itself.[1]

Into the details of this it is not necessary to enter here, but I should like to say that where pain is at all obtrusive colchicum is the best palliative, and that it is desirable to withdraw the remedy as soon as the pain has subsided. There are, however, a great many varieties of gouty arthritis which are truly chronic from the beginning, attacking various joints, notably the small joints of the hands and the meta-tarso-phalangeal joints in the feet, giving rise to enlargement and deformity rather than to pain. This is the so-called chronic deforming gout, so frequently labelled chronic rheumatism, which is by no means easily distinguished from rheumatoid arthritis, especially if we make the mistake of concentrating our attention upon the local manifestations of the disease to the exclusion of the general state of the patient. For in the gouty condition there is, as a rule, no difficulty in discovering the existence of sthenic manifestations in other organs or tissues, whereas in rheumatoid arthritis not only are such manifestations absent, but the clinical picture is essentially one of asthenia, demanding not an eliminative but a generous régime.

[1] See p. 119.

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The arthritis of chronic gout is probably more amenable to electric light baths than to any other therapeutic measure. The baths, especially when combined with massage, bring about the absorption of the deposits with a rapidity and completeness which is astonishing to those who have never tried them. Hot-air baths, douches, and the various measures of a similar kind which are employed at health resorts, stand next in order of efficacy, and where the patient's means permit, it is always well to advise a visit to a suitable spa.[1]

For the rest it is important to insist that chronic gouty joints should not be allowed to become fixed and deformed for want of exercise and movement. Massage is an excellent measure, so is electricity; so, in fact, is anything which will insure regular stimulation. In this direction much can be done by the patient himself, and there is generally no difficulty in inducing him to do it, if it is brought home to him that ultimate recovery of a crippled joint depends more upon his willing and intelligent co-operation than upon the assistance of others. Stimulating liniments are very useful adjuncts, especially when applied after the part has been

[1] Vichy and Royat are two places which may be recommended with confidence. Aix-les-Bains has deservedly a world-wide reputation. Buxton, Bath, Harrogate, Woodhall Spa, and Llandrindod offer exceptional advantages to people who prefer to stay at home. It should be remembered that the ingestion of sulphur waters seldom suits the gouty; their external application does.

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steeped in hot water. Poultices and compresses containing bicarbonate of sodium or citrate of lithium are also very helpful in reducing swelling and restoring movement.

A method of treating stiff and painful joints which is very highly spoken of by some, is cataphoresis, by which medicinal substances are transferred to the joint through the unbroken skin by means of the constant electric current. Theoretically the positive pole should be that to be placed in contact with the drug, but clinically it is found that some drugs penetrate better with the negative pole, and amongst these are iodide of potassium and salicylate of sodium. A procedure which has seemed to me to give good results is to paint the part with iodine, and then place upon it a pad of lint which has been steeped in a solution of lithium citrate. The positive pole is then placed on the pad, and a current of about 10 cells is allowed to flow. When the pad is removed the colour of the iodine will be found to have disappeared. Whether this fact has any 'suggestive' effect in bringing about the result I am unable to say.

I feel I ought not to leave this question of gouty or rheumatic arthritis without saying a word in connection with the reprehensible practice of lightly dismissing joint troubles in children as due to this cause. Such troubles, it is true, are seldom labelled gout, but they are labelled rheumatism with a frequency which is far from creditable. The truly rheumatic state in children so rarely takes the form

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of an arthritis that, apart from the disease closely resembling rheumatoid arthritis and associated with the name of Dr. Still, such a condition may almost be said not to exist. Rheumatism in children shows itself as chorea, tonsillitis, subcutaneous nodules, erythema, purpura, and the like, but seldom or never as an arthritis. An enlarged or stiff and painful joint in a child, therefore, especially if only one joint be involved, is exceedingly unlikely to be rheumatic or gouty in origin, and great care should be taken in so describing it. Such conditions are more often due to tubercle than to anything else. Their progress is fraught with considerable anxiety, and their treatment demands the utmost care and watchfulness. Numberless limbs have been sacrificed and lives lost owing to the loss of precious time, due to the otiose diagnosis of 'a little rheumatism' where arthritis in a child has been present.

Of abarticular gout there are a great many forms. Chronic pharyngitis is by no means uncommon, chronic laryngitis is common, and chronic bronchitis is not rare. The gouty poisons as they affect the lower air-passages seem, however, to void themselves in acute explosions rather than in chronic irritation. Thus, an acute bronchitis of gouty origin is an exceedingly common event. It is important to remember this, because bronchitis is invariably attributed to chill, and if we allow ourselves to be beguiled by such etiological suggestions we shall fail to treat the case as it should be treated—namely,

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by mercurial purges and the addition of iodide of potassium, and perhaps some colchicum, to the drugs intended to combat the bronchial irritation. Asthma is another very common form of gouty ebullition. Inasmuch as iodide of potassium is one of the most useful remedies in ordinary spasmodic asthma, failure to recognise its gouty origin is, so far as the attack itself is concerned, not of much consequence; the recognition becomes of importance only when we are considering the best means of providing against further attacks, and if we do not realize their true origin, our precautionary measures are likely to prove singularly ineffectual. One of the commonest associations of asthma, which is a symptom and not a disease, is with high arterial tension. As this important question is considered in some detail later, it is here only necessary to call attention to the fact, and to insist that the high tension should be treated by appropriate means, rather than the asthma relieved by habit-provoking sedatives.

The gouty affections of the nervous system consist in myalgia, neuralgia, neuritis, insomnia, mental irritability, mental depression, migraine, and epileptiform attacks.

In the skin the diathesis may show itself as an eczema, a psoriasis, an erythema, and, contrary to what is generally believed, as furunculosis. Boils are commonly regarded as a symptom of asthenia; they are, especially when occurring in successive crops, in my experience much more often due to the gouty

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poison. Why this poison should favour the activity of staphylococci in the hair follicles it is difficult to say, but that it does so is, to my mind, abundantly clear.

An excellent treatment for boils consists in the administration by the mouth of pills of calcium sulphide (1 grain) three or four times daily (smaller doses are useless), and the local application of ichthyol ointment (about 15 per cent.). This does a great deal of good where the boil is a 'singleton,' relieving very considerably the local pain and hastening resolution. Where, however, the boils, as is often the case, tend to appear in successive crops, the patient should be injected with antistaphylococcic serum. This treatment, introduced by A. E. Wright, is practically painless; there is no constitutional disturbance, and the result is uniformly satisfactory. It does not, of course, in any degree influence the underlying gouty condition, which should be treated on the lines already suggested.

Gouty men tend to become bald early, probably owing to vaso-constriction of the arteries in the scalp, and their nails assume a reedy appearance from longitudinal striation.

So far as the other skin manifestations are concerned, such as gouty eczema, in the existence of which some dermatologists affect to disbelieve, they are to be treated locally according to dermatological rule; but if their recurrence is to be prevented, their underlying gouty cause must receive adequate attention on the lines already laid down.

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In the eye, gouty iritis and gouty conjunctivitis are common. These conditions, when of gouty origin, are less liable to be acute than when they own some other cause, and consequently the local treatment need not be so vigorous. A blister and a few hot fomentations, and perhaps a little atropine, are all that is required. If the blood state is properly treated the condition will quickly yield.

In the alimentary tract dyspepsia is very common. The indigestion of gouty people is usually, but not invariably, of the sthenic variety, demanding alkalies and bismuth; but it may, on the other hand, be asthenic, and require hydrochloric acid and pepsin for its relief.[1] Another form of indigestion—namely intestinal indigestion—is much more common in gouty people than is generally supposed, more especially in such as take large quantities of alcohol. It takes the form of diarrhœa[2] often accompanied by flatulence. It is generally painless, and is usually confined to the morning. If possible, it is well to refrain from interfering with this discharge; the flux should, indeed, be encouraged by mercurial cathartics, for the process is entirely beneficial, in that it rids the system of effete matters without irritating the kidneys. Tannigen (10 grains in cachet) is an excellent simple astringent. Tincture of catechu (1 drachm) is another. Whatever is used, it is

[1] *Vide* chapter on Indigestion.

[2] *Vide* Constipation and Diarrhœa, p. 96.

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important to remember that neither lead nor opium should ever be prescribed.

The connection between gout and kidney disease is one which has long been recognised. There exist, however, very decided differences of opinion as to the exact nature of this connection; and yet the matter does not seem to present any very great difficulties. Luff expresses the balance of modern opinion on the subject of gout generally when he says that the disease is due to faulty metabolism giving rise to an auto-intoxication. He goes on to say: 'This auto-intoxication coincides with, or is followed by, in the majority of cases, a deposition of sodium biurate in certain of the joints or tissues, which constitutes the climax of the gouty attack. I cannot but think that with our increasing knowledge and experience of the disease, uric acid and its salts will, in all probability, have to be relegated to a position of subsidiary importance in the pathogenesis of gout. The joint manifestations are probably dependent upon much more general and much larger conditions than a mere excess of uric acid in the blood. The deposition of sodium biurate is possibly merely the sign of the disease, not the essence of it.'

Now, if we admit the auto-intoxication—and there is no escaping it—the connection between gout and kidney disease seems simple enough. And not only the connection between gout and kidney disease, but the connection between gout, kidney disease, and arterio-sclerosis. And this is how the matter would

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seem to stand: the toxin circulating in the blood has, as one of its results, the irritation possibly of the vaso-motor centres, but almost certainly of the bloodvessels along which it passes. The effect upon these blood-vessels is to cause their contraction, and when the contraction is continued for a long period of time, the vessels become sclerosed.

Now, this poison is normally excreted by the kidneys, so that it is projected on to these organs not only in a concentrated form, but with 'nozzle velocity.' If the initial power of resistance in these organs is weak, the renal vessels quickly sclerose, and the sclerotic process spreads, as it were, all over the organs. Then arise the phenomena with which all are familiar—the increased blood-pressure, the enlarged left ventricle, and the consequent progressive arterio-sclerosis all over the body.

This is easy to understand, and is very generally realized. What seems to me to require insisting upon is that this process is frequently reversed, in the sense that the arterio-sclerosis, instead of beginning in the kidneys, may originate elsewhere and spread to these organs, so that the granular nephritis, instead of being the first stage, figures either as an accident or as the final event in the morbid process. For the process, like all other morbid processes, will begin at the site of least resistance, and this site will vary with the individual, so that if the renal vessels are not primarily below par there is no special reason why they should be first affected. And, as a matter of fact, they very

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seldom are, and I am convinced that a great number of the cases of granular kidney and general arterio-sclerosis might be checked if sufficient regard were paid to the detection of the earlier manifestations of arterio-sclerosis in other parts.

Now, although we are for the moment dealing with the gouty poison, I must not be understood to suggest that this is the only form of toxin which may give rise to the phenomena we are about to consider. It is, on the contrary, well recognised that the poisons of lead, tobacco, syphilis, typhoid, acute rheumatism, scarlatina, and other acute specifics, frequently carry arterio-sclerosis in their train; and that worry, anxiety, and concentrated brain-work are very liable to produce it. But this I am prepared to affirm—namely, that by far the commonest cause is to be found in those dietetic and other errors, such as excess of flesh foods, alcoholic drinks, and insufficient exercise, which all agree in associating with the production of the gouty state.

The French have an aphorism to the effect that 'gout is to the arteries what rheumatism is to the heart,' which means, of course, that arterio-sclerosis is as common an accompaniment of gout as endocarditis is of true rheumatism. The idea would, however, be better expressed in English by saying that 'goutiness' is to the arteries what rheumatism is to the heart; for in acute gout the poison usually exhausts its virulence during the attacks, which consequently protect the sufferer from the symptoms of goutiness.

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Now, if we bear this aphorism in mind it helps us in a great measure to understand that otherwise baffling element of ubiquity which characterizes the symptoms of goutiness, by teaching us to regard these symptoms as due primarily to some dereliction of duty on the part of the arteries in the immediate neighbourhood. Such an explanation does not, perhaps, cover all the facts; it serves, at any rate, to remind us of what in our search after the exact nature of the gouty poison we are sometimes in danger of forgetting—namely, that this poison has a particular affection for the arterial vascular system.

Let us now consider its *modus operandi*. We have already seen that the gouty poison causes contraction of the arteries. It is important to remember that this contraction is at first functional, and therefore curable, but that if it goes undetected and unremedied, it becomes organic, and therefore incurable. It becomes incurable in the ordinary acceptation of the term, but its effects may nevertheless be mitigated, and in the earlier stages even nullified, by suitable treatment. The functional, the curable, stage is called by the French the stage of presclerosis, and it is, of course, in this stage that it is desirable to recognise the condition, and to set about its treatment. For when once the stage of presclerosis is past and the stage of organic sclerosis is entered upon, the disease, though much easier to detect, is much more difficult to treat. Now, how are we to recognise this first stage—the stage

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of pre-sclerosis? Well, it is by no means easy, and, as I have already said, in connection with goutiness generally, the first thing to remember is not to forget it. Because it must always be sought for; it never calls attention to itself by any very obtrusive symptoms, and the indications of its presence are very variable. The first effect of a general contraction of the branches of the arterial tree will be increased vigour of the heart's action. The cardiac muscle is stimulated by the resistance, which it seeks to overcome by slower and more forcible contractions. Now, if we keep these two facts in mind, the contraction of the vessels and the increased vigour of the heart's action, the phenomena to which they give rise, individually and collectively, are not difficult to follow.

First of all, then, with the contracted arterioles we find pallor of the surface, more especially of the face, cramps and numbness, together with coldness of the legs and feet, and fingers that 'go dead,' slight giddiness, and momentary mental confusion, which are very liable to be mistaken for attacks of petit-mal, which may, indeed, degenerate into such attacks unless their true origin is recognised and treated. Further, there may be mental lethargy, and although the patient sleeps badly, he is always drowsy. There is also disinclination for work, especially pronounced in the morning. Another effect, referable to the nervous system, is the production of neuralgias of various sorts; persistent or recurrent neuralgia, or

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headache, is very suggestive of high arterial tension. Someone has said that neuralgia is the cry of a nerve for healthy blood, so that if the arterioles which supply a particular nerve contain impure blood, and by reason of their contraction are able to deliver such blood in reduced quantities only, it is not surprising that the nerve should become painful. The facial and sciatic are those most frequently involved.

The effect of the vascular contraction in the bowels is, as one would suppose, the production of constipation, and in the kidneys, polyuria. These symptoms are fairly constant, more especially the polyuria. The contraction in the systemic periphery naturally causes plethora in the pulmonary periphery, and thus we find dyspnœa to be prominent, an important and a highly characteristic symptom. This dyspnœa, the dyspnœa of slight effort, must not be confused with the asthma which is so liable to supervene in the later stages of the affection. This dyspnœa, even when extreme, never has the characteristic laborious expiration of asthma, but resembles far more closely the panting of renal air-hunger, which one so often sees in the last stages of a chronic nephritis. It is provoked by very slight exertion, it is often accompanied by a vague feeling of uneasiness in the chest, or by palpitation, and is liable to occur at night, without obvious cause. This symptom derives its importance partly from the fact that it is the one which usually brings the patient under observation, and largely from its liability to

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be confused with the dyspnœa and palpitation of ordinary dyspepsia.

The complaint of dyspnœa would naturally lead every conscientious practitioner to an examination of the cardio-vascular system, and here he will find two objective facts to help him. The first is the character of the pulse, and the second is an accentuated second sound at the aortic cartilage.

In connection with the pulse there are three points which deserve the closest scrutiny. The first is the state of what is called the tension of the radial artery. The term is not a very correct one, but it has become stereotyped, and we must therefore use it. This tension is dependent upon three factors: the amount of blood in the vascular system, the force of the heart's action, and the tonicity of the arterial walls; and it is influenced in health by various conditions, some of which it is well to recall. Thus it is raised by muscular effort, by coughing, sneezing, and the like, but is lessened by passive movements and by massage. Contrary to what one would expect, it is raised during sleep and the recumbent posture, and depressed by the waking state and the upright posture. It is raised by cold baths and very hot baths, but lessened by baths which are merely warm. It is also raised at the menopause and during digestion. A condition of high tension which is persistent is always pathological.

Now, how are we to determine when the tension of a pulse is unduly high? It used to be said that the

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educated finger was the best guide, but this is in reality a counsel of perfection, because, as C. J. Martin points out, the finger is, in this matter, very difficult to educate, so far, at any rate, as slight degrees are concerned. To appreciate slight variations from the normal blood-pressure, it is, according to Clifford Allbutt, just as necessary to use a mechanical appliance as it is necessary to use a thermometer for the accurate appreciation of temperatures. There are a great number of such appliances on the market, most of which have very definite drawbacks.[1] Rolleston[2] speaks well of Stanton's modification of Riva Rocci's instrument, and, though suitable for hospital and consulting-room use, it cannot be described as portable. In Dr. George Oliver's new instrument,[3] in which alcohol takes the place of mercury as the indicator, the hitherto existing difficulties would seem to have been overcome, but it is still too early to speak with confidence.

As, however, it is often necessary to decide upon the general question of high or low pulse-tension when no instrument is at hand, it is well that we should learn to utilise such means as are always available. For such means do exist, and it is always possible to detect definite high arterial tension by paying attention to the following points. Having

[1] T. C. Janeway, 'The Clinical Study of Blood-pressure' (D. Appleton).

[2] *Clinical Journal*, June 21, 1905.

[3] The hæmomanometer (Hawksley, 357, Oxford Street, W.).

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regard to the fact that the artery is contracted, we expect to find it small and hard; and so it usually is, but—and this is important and may appear paradoxical—it is not necessarily incompressible. The smallness is generally very pronounced, and when the hardness is equally so, the term 'wiry,' which has been applied to it, is very appropriate. The beats are sometimes difficult to feel, but each one seems to tarry unduly under the finger, and one is conscious of the fact that the vessel is full even between the beats.

The next point, closely connected with the state of tension, is the pulse-rate. In ordinary cases this is slow, in accordance with Marey's law, that the pulse-rate is in inverse ratio to the arterial tension; and when it is slow, the beats seem to have a dragging quality, as if each one were prolonged. But although the pulse is slow in the earlier stages, while the heart is still capable of overcoming the peripheral resistance, there comes a time when the central organ tires, its expulsive force lessens, and instead of bradycardia we have tachycardia. When, therefore, we find a small, hard, contracted artery in association with tachycardia, we know that, unless energetic measures are adopted, trouble will very shortly ensue.

And here let me once more emphasize the fact that such trouble does not always emanate from the kidney. High arterial tension is in the minds of far too many so indissolubly connected with renal disease that if, by an examination of the urine, they can persuade

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themselves that the kidneys are healthy, they are unable to realize that the high tension can be doing any harm. As a matter of fact, the danger under these circumstances is not with the kidneys, but with the heart, which, exhausted by the unequal combat against the peripheral resistance, dilates, giving rise to valvular insufficiency and pseudo-anginal attacks.

But there is another means of determining the state of the pulse tension, which, though very simple and effectual, I have never seen described in any English text-book. It is very commonly employed in France, where Huchard was the first to call attention to its value. Dr. Graves, of Dublin, many years ago noted that the number of pulsations was normally fewer by 6 or 8, in the recumbent than in the upright posture. It was reserved for Huchard and his school to deduce any practical lesson from this fact, and they have shown that in states of high arterial tension this ratio is always reduced; it may be abolished or even reversed. Thus, if the pulsations counted while the patient is standing reach 88, they ought, after a few minutes in the recumbent posture, to fall to 82 or 80. If they do not, then the arterial tension is unduly high, and this fact becomes very much emphasized if, instead of falling to 82 or 80 on lying down, they become increased to 100 or 102. This method, then, not only enables us to establish the existence of high arterial tension, but it enables us to some extent to

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gauge its degree. It is thus at once a simple and accurate means of arriving at a correct estimate of the state of the arterial tension, and he who would make an early diagnosis of the conditions which lead to arterio-sclerosis will do well to remind himself that the two positions are as important in examining the pulse as they admittedly are in searching for murmurs in the cardiac area.

So much, then, for the pulse. When we come to examine the heart, as we should do, to determine the exact site of the apex-beat, and map out the area of relative dulness (the amount of absolute dulness affords no information of any value), if we are seeing the case in the very early stage, we shall probably discover nothing abnormal. For it is, as a rule, not until the later stages, where definite arterio-sclerosis is already in full swing, that the heart breaks down and dilatation ensues. When the stethoscope is used—[never trust the man who commences an examination of the heart by listening]—there will probably be no murmur; the sounds may have a muffled quality, but the second sound at the aortic cartilage will be unduly loud. Under normal conditions, it is the pulmonary second sound which is the louder; but where arterial tension is unduly high the aortic second sound becomes much more pronounced, and this accentuation is very properly regarded as one of the most important signs of the condition. The degree of accentuation will vary, of course, with the amount of increased tension, but the

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sound is often very loud, and has even been compared to the popping of a cork when drawn from a bottle. When it assumes a ringing, metallic, or clicking note, it is certain that the stage of pre-sclerosis is past, and that of definite arterio-sclerosis is well established.

Although there are other signs of high arterial tension, it is not necessary to enumerate them. The multiplication of symptoms tends only to confusion, and the nature of those which are liable to arise in the state of pre-sclerosis can easily be imagined if we remember the essential conditions of this state—namely, a toxicity of blood, contracted arteries, and reduced blood-supply, with their logical accompaniments of high arterial tension and an underfed, overworked heart.

Among the signs and symptoms to which attention has already been called, three are so important as to deserve special emphasis. One symptom, that of undue breathlessness on slight exertion, is of all others the most constant and the most important. It is rarely, if ever, absent, and its suggestiveness should never be lost sight of. If this breathlessness, or, indeed, any other symptom, should give rise to a suspicion that the arterial tension is unduly high, there are two physical signs which, when both are present, will establish the fact beyond the shadow of a doubt. The one is the abnormally accentuated second sound at the aortic cartilage, especially if it be 'booming' or 'popping'; the other

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is the abolition or reversal of the normal difference of the pulse-rates in the erect and recumbent postures.

I may, perhaps, be charged with dwelling unduly on the nature of this condition and its symptoms, but my excuse must be that it is important from every point of view. Little is thought or written about it in this country, and yet its recognition and treatment are of the gravest possible moment to all concerned. We hear a good deal about arterio-sclerosis as a clinical entity, but the text-books are silent as to how we should proceed so as to detect its early stages, and as to how we should act so as to check its further development. It should be remembered, then, that the gouty poison is a powerful vaso-constrictor; that if this vaso-constriction is maintained, it gives rise to high arterial tension; and that if persistent high arterial tension is not lessened, definite arterio-sclerosis, leading among other things to apoplexy, granular kidneys, and angina pectoris, will certainly ensue.

Now, how is this high arterial tension to be lessened? Obviously, by removing the gouty poison, and by taking such steps as will insure the permanent reduction of its manufacture in the system. Into the general principles which should guide us in these matters I have already entered in some detail, but I may briefly recapitulate those which have a special bearing upon the question under consideration.

First, then, as to diet, without careful attention to which it is quite hopeless to attempt the treatment of

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high arterial tension of gouty origin. The embargo upon meat foods must be absolute; and under meat foods, let it be clearly understood, are included fish, poultry, and game. Alcoholic drinks, tea, and coffee must also be absolutely forbidden. The patient must be encouraged to drink plenty of milk, and to take fruits and vegetables freely. What I have said about the great importance of taking plenty of fluid in the gouty state generally must be accepted with considerable reservation in the case of high arterial tension. If the excretion of the extra fluid can be insured, then the extra fluid can do nothing but good. If, on the other hand, an appreciable portion of it remains, then, by increasing the actual quantity of blood in the vessels, and by thus adding to the state of tension, it is liable to do harm. For this reason, a flushing policy, though excellent when it succeeds, should in the first instance, at any rate, be undertaken with caution. The emunctories must, nevertheless, all be urged to do their part in ridding the system of the gouty poison, and the purgatives, diuretics, and sudorifics already referred to must be pressed into the service.

So far as purgatives are concerned, nothing can compare with mercury, and for a diuretic it is as well to use that which has been so highly spoken of by Professor Huchard, to whose teaching we owe almost all our knowledge of the pre-sclerotic state—namely, theobromine (see p. 173). The waters of Evian, Contrexéville, and Vittel are admirable aids to all diuretic

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drugs, and would seem, especially the first named, to possess a special value in the condition we are discussing. The best means of stimulating the skin—that is, by warm baths and electric light baths—have already been referred to. Another excellent general measure—namely, massage—is capable of rendering yeoman service in states of high arterial tension, especially when applied to the abdomen; for it helps to dispel 'abdominal venosity,' and to pass the blood rapidly through the organs which are credited with being actively concerned in the manufacture of the gouty poison. This, which is mere recapitulation, refers to general measures, the importance of which should never be lost sight of.

We now come to the question of our ability to act directly upon the high blood-pressure and to reduce it by means medicinal or otherwise. Do such means exist? Well, they do, but none of them are satisfactory; for the reason that their action is very transient, and their continued employment is by no means unattended with danger. First among them stands blood-letting. Where we find ourselves in an emergency, face to face with a threatening of cerebral hæmorrhage or an anginal attack, no one would, I presume, hesitate to abstract blood from the arm to the extent of half a pint or more. But it is obvious that this is a process which cannot be often repeated, and, as the high arterial tension depends less upon the quantity of the blood than upon the state of the vessel wall, it is useless to reduce the one (especially

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as the reduction cannot be maintained) without influencing the other.

And a similar objection applies to the drugs hitherto introduced for this purpose. Nitrite of amyl, though entirely trustworthy in emergencies, is incapable of prolonged action. Trinitrin is in reality only a degree better. It takes longer to act than nitrite of amyl, and its effect is maintained for a longer period; but the relief it gives is ill-sustained, and it cannot be frequently repeated. The same objection applies to erythrol tetranitrate (1 grain in tablets three times daily), though to a much less extent. Thyroid extract seems to act beneficially in a good many cases, and where tachycardia is not yet present it may be tried with considerable confidence. In the high arterial tension which is so common with women at the menopause some observers claim to have had good results with ovarian extract. The physiological basis for its employment is certainly sound, and if it does no good, it can do no harm. Aconite has been recommended by some people, and chloral extolled by others. The employment of both these drugs is, however, fraught with such obvious drawbacks that it is scarcely necessary to consider them.

In the way of drugs, then, there is nothing upon which we can, in the present state of our knowledge, depend for a definite and sustained action of a specific nature, without incurring risks which it does not seem to me that we are justified in taking. And this is perhaps all to the good; for if we had

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such a drug we might be tempted to use it to the exclusion of those general principles of diet and hygiene on which the successful management of the gouty diathesis is known to depend, and on which, especially when combined with the judicious employment of mercury and iodide of potassium, full reliance may always be placed.

I have already pointed out that the danger in the state of pre-sclerosis is not so much with the kidneys as with the heart, which, being overworked and underfed, is in imminent danger of dilatation. I now revert to the question in order to consider its bearing upon treatment. Where arterial tension is high, the heart is always endeavouring to force the blood through the constricted vessels. Among the vessels which become constricted are those of the heart itself—the coronary arteries. Now, it is obvious that if the heart is forced to undertake an increased amount of work, and if it is at the same time supplied with blood which is insufficient in quantity and poor in quality, among the earliest and most frequent of the complications which we must expect are those which are to be referred to the cardiac area. We have already seen that the bradycardia which is normal to a condition of uncomplicated high tension is liable to be replaced by tachycardia as soon as the heart begins to flag. At this stage and a little later it will be found that the apex beat becomes displaced, and is visible over a much larger area than it ought to be. The shock of the ventricle against the finger

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becomes exaggerated, and the percussion dulness is increased. On listening, the first sound is generally prolonged at the apex, and the aortic second sound very much accentuated at the base. There may be bruits, that suggestive of mitral regurgitation (a systolic murmur at the apex) being especially common.

Now let us ask ourselves what is likely to happen to a patient who presents himself with this cardiac condition to a physician who fails to test for, and therefore to discover, the real cause—namely, the high arterial tension. He will almost certainly be given digitalis (in small doses, let us hope), with a view of toning up the heart and curing the dilatation. Such a line of treatment is foredoomed to disastrous failure. The high blood-pressure has caused cardiac exhaustion. Digitalis increases the blood-pressure, and, consequently, adds to the cardiac distress. 'But,' someone may object, 'digitalis is a cardiac tonic.' It is indeed, but what good can a tonic produce if the cause of the distress be not first removed? One would not give a quinine pill to a man staggering under a heavy burden—at any rate, until the burden had been removed. And so it must be with the heart. The important, the paramount necessity is to relieve the high arterial tension, and when this is effectually done, it will usually be found that no heart tonics are required. An enormous amount of permanent harm is wrought by the exhibition of digitalis in these cases. The bruit at the mitral valve

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is in reality the indication, not of danger, but of a most salutary and truly conservative process. The pressure in the left ventricle becomes so high that the mitral valve leaks, as it were; but the leak is a safety-valve process, and its occurrence, by lowering the tension in the systemic periphery, prevents hæmorrhages into the brain and other organs. It is essential, then, before giving digitalis in a case of cardiac dilatation, to ascertain that the dilatation is not due to high arterial tension. If it is, digitalis will do harm,[1] and the only proper treatment is provided by the dietetic and other measures, which have already been explained.

[1] See Chapter VIII., p. 285.

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CHAPTER VI.

CHANGE OF AIR.

To prescribe change of air with intelligence, it is necessary to have some knowledge of climatology; to prescribe it with success it is essential to have some acquaintance with different localities. As a science, climatology is in its infancy; but since a working knowledge of its principles is by no means difficult of attainment, I propose, briefly, to explain these principles, and to consider their broad therapeutic applications. A real acquaintance with localities is obtained, not by reading, but by travel, not from guide-books, but from experience; but some localities having, on account of their natural mineral waters, attained to special repute in certain complaints, I shall conclude by offering a few considerations on some of the better known of these localities, and the conditions in which they may be prescribed.

The basis of all sound climatology is necessarily sound meteorology. Meteorology deals with weather, and weather in the mass spells climate. Observations with regard to the weather in a place, however

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accurately conducted, say for a month, are valueless; but if the same observations are continued and recorded over a period of years, we have the data by which we are able to estimate the climate of that place.

But there are some factors which go to the formation of climate which we can obtain without an appeal to the meteorologist—very important factors, which we can observe for ourselves, which, when determined, will enable us to foreshadow in some measure the facts and figures with which we shall be supplied by the records. Of these, there are but three which need concern us at present; they are exposure, elevation, and subsoil. With regard to exposure, it is obviously a matter of prime importance whether our locality is open to, or hidden from, the sun; whether it is exposed to, or protected from, the cold winds (which in this country are north and east); and whether or not it is within the range of any great modifying influence, such as the sea. These are points which should be carefully ascertained and their probable effects noted, for there are no merits which can outweigh any serious drawbacks in this direction. No combination of climatic virtues can, for example, be held to compensate for an absence of sunshine which is caused by the conformation of the surrounding district, which is, therefore, persistent and inevitable.

Another important factor is elevation. The higher we go, the more rarefied does the atmosphere become;

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that is, there is less weight of air, giving rise at high altitudes to a feeling of lightness and buoyancy. Moreover, the higher we go, the less is the moisture, the purer is the air, and the greater are the daily ranges of temperature. The physiological effects of these conditions are quickened pulse and respiration rate, increased evaporation from skin and lungs, and, after a very short time, increased number of red corpuscles in the blood.

It is scarcely necessary to insist upon the influence which the character of the subsoil is liable to exercise on climate. Porous soils, such as chalk, sand, sandstone, and gravel, allow of the free passage of moisture both upwards and downwards, and are credited with being especially healthy. Impermeable soils, such as clay, slate, rock, dolomite, and the like, are supposed to be unhealthy, in that they do not permit of the free passage of water from above downwards. Now, although I would not deny to the character of the subsoil a certain influence on climate, there is certainly a very great tendency to overestimate its importance. Especially is this the case in civilized countries, more particularly in towns, where drainage and other subterranean systems are in vogue; for here the natural tendency of water to stagnate upon, or immediately beneath, the surface is always nullified by the activity of man. The nature of the subsoil, therefore, though it may, when other things are equal, be profitably considered, should not, as a rule,

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be set on the same level of importance with the other factors.[1]

Before applying to the meteorologist, there are other points upon which we, as medical climatologists, must always satisfy ourselves with regard to a place which poses as a climatic station or a health resort. Climate is for us either a therapeutic agent, or a means to the maintenance of health, and we must be careful that what we may gain in climate we do not lose in other respects. The first question, then, to ask with regard to such a place is, 'What is its drainage system, and what its water-supply?' And, having received satisfactory assurance on this, the question of public sanitation, we must not allow ourselves to be lulled into any false sense of security, but we must make careful inquiries, from such as are disinterested in the matter, into the question of private sanitation. The condition of the hotels, boarding-houses, and lodging-houses must be above suspicion. Many of the local authorities at these places grant sanitary certificates to houses which have been examined and approved. It is the fashion among certain people to make merry over these certificates by asking what is to prevent something going wrong in the twelve months which elapse between each inspection. There is, of course, nothing to prevent accidents, either in this or any other

[1] *Vide* a paper on 'The Clay and Gravel Soils of London,' by S. D. Chippingdale, M.D., F.R.C.S., *Journal of Balneology and Climatology*, January, 1902 (vol. vi., p. 14).

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scheme; but the system has, at any rate, this great merit—that it guarantees that the laying of the drains has been sound, that the method of their ventilation is efficient, that the type of closet is satisfactory, and that the water is not derived from shallow polluted wells. It may seem unnecessary to dwell upon this aspect of the matter, but it is in reality of the utmost importance. It has too often happened that one effect of recommending a family to a health resort has been that some member of it has remained in the local cemetery as the result of typhoid contracted through the drinking-water in the lodgings.

Having now decided these questions, let us make our appeal to the meteorologist. He would, if we would allow him, tell us many things, but we may restrict our inquiries to four points. These are sunshine, rainfall, humidity, and temperature. These four are to a very large extent interdependent. Thus, rain spells cloud, and cloud means the obscuration of the sun's rays; plenty of sunshine means a relatively high temperature during the day, and a fall at sundown, hence considerable variations; a high relative humidity gives rise to equability—that is, absence of extremes of temperature; so that, although we shall now consider these factors in detail, it is important to remember that they cannot really be dissociated.

The effects of the sun in warming the air, especially in moist climates; of warming the earth, and thus raising the temperature, are well understood. Recent

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observations have also established beyond question the bactericidal powers of the direct rays, so that we now know that amongst the other blessings which it confers, abundant sunshine gives rise to purity of the atmosphere. Other less understood but much appreciated effects are seen in the uses to which Finsen and his followers have put the concentrated rays. But when all these have been discounted, there remain the unanalyzed subjective sensations to which direct sunshine gives rise. And these subjective sensations are merely the result of certain stimuli which, though we cannot define them, we know instinctively to be wholesome and health-giving. The vegetable deprived of sunshine withers and dies. That something of the same effect is produced upon the human being may be believed from the French saying that where the sun enters seldom, the doctor enters often. Climatically, then, abundant sunshine is of the very first importance, and no place—in this country, at any rate—should be selected even for a summer residence which does not afford abundant opportunity for the utilization of this great remedial element.

A fair annual average of hours of bright sunshine is 1,500, divided into summer 1,000, winter 500. And while on this subject of sunshine, it may be as well to point out what applies, indeed, to all the meteorological data from which the nature of a climate is deduced—namely, the folly of resting content with vague assurances such as 'This is a very sunny

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place,' or 'It is very warm here in winter.' To obtain reliable information it is necessary to insist upon facts being laid before us upon which an impartial judgment can be formed. The facts, be it observed, concerning any place which claims to rank as a health resort or climatic station can always be obtained from the publications of the Royal Meteorological Society.

The rainfall of a place is important to invalids, the majority of whom will not venture out when rain is falling. A moderate amount of rain is not only no drawback to a climate, but, in that it brings down suspended impurities, it is one of the agents which help in maintaining the cleanliness of the atmosphere. A moderate rainfall is from 25 to 30 inches annually. The average for England and Wales is 35 inches. To show the importance of ascertaining facts upon this point, instead of mere impressions, it is well to remember that there are places with very high rainfalls, so high, indeed, as to be almost incredible when compared with the above-mentioned average. Such are Killarney, 58 inches; Llyndulyn, 104 inches; Southwaite, 129 inches. No place with a fall of more than 40 inches can make any legitimate claim to rank as a health resort.

In considering the rainfall of a place it is necessary to ascertain not only the amount which falls in the year, but also the number of days on which rain is recorded to the amount of 0·01 inch or more. If the total fall is moderate and the number of days is con-

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siderable, then it becomes evident that only a small quantity falls on individual days. This is the rule in most English stations, but in some of the tropical and subtropical climates—Jamaica, for example—though there is a considerable annual fall, the number of rainy days is small. This means, of course, that there is a rainy season, which one naturally advises invalids to avoid. There are some places, even at home, which seem to have a tendency to rainy seasons, so that it is as well to inquire, not only as to the number of rainy days, but as to the months which contain the majority of these days.

A great French climatologist, on being asked what was the most important factor in climate, replied, 'Humidity.' Not only do I believe this to be correct, but I would go so far as to say that humidity bears the same relation to climate as, according to Demosthenes, gesture bears to oratory. Humidity is a very complex entity. It seems as if it ought to have some connection with the rainfall, but it has not. It is not, of course, suggested that a fall of rain does not increase the atmospheric humidity on a day which up to that time had been dry. Everyone is familiar with the softness and freshness which rain under such circumstances produces. The point is that the humidity of a place, as observed over long periods of time, has no ascertainable relation to the rainfall of that place as similarly observed; that, in fact, there are many places which have a high humidity and a

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low rainfall, and others which have a high rainfall and a low humidity.

Humidity is of two kinds—absolute and relative; and these two kinds have no ascertainable relation to one another. Absolute humidity is the actual number of grains of vapour in a cubic foot of air; relative humidity is the percentage of moisture in the atmosphere, saturation being taken as 100. To show the difficulty of stating one in terms of the other, I quote the following: 'If the inspired air contains 3 grains of aqueous vapour per cubic foot at 50° F., it has a capacity for an additional 15·7 grains at 98° F., and its relative humidity is 74 per cent. If the air is inspired at 42° F. with the same amount of moisture—viz., 3 grains—it still has the same capacity, but its relative humidity is now 98 per cent.'[1]

When humidity without any qualifying adjective is mentioned, relative humidity is usually meant —that is, the percentage of moisture in the air. Anything over 80 is considered high; anything approaching 60 is deemed low. This is assuming the temperature of the air in both instances to be 55° F. No comparison is possible between the relative humidity of different places, unless the external temperature at the time of observation is the same in all cases. Now, a high relative humidity is produc-

[1] Dr. C. W. Buckley: *Journal of Balneology and Climatology*, April, 1903.

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tive of equability of temperature. The moisture in the air plays the part of a wet compress, and hinders the passage of heat from the earth. When the temperature falls, moisture is deposited from the air; hence there is a tendency to the formation of mist or fog. Where the relative humidity is low, there are very considerable variations of temperature. It is warm in the day and cold by night, and there is much less tendency to the formation of fog.

One word on this question of the formation of fog. When the temperature falls suddenly, the moisture contained in the air is deposited. This may be seen exemplified on the outside of any glass in which iced fluid is contained. The suddenly lowered temperature in the immediate vicinity of the glass causes a deposit of moisture on the outside of the glass. Dew on the grass is the result of the same cause. Fogs are brought about in a manner precisely similar, but to the formation of fog or mist, a still atmosphere is essential. Now, London fogs, and the fogs of other great cities, are injurious, not because of their moisture, but because that moisture is deposited upon the particles of dust and other irritating matters which are floating in the air, and the weight of the deposited water brings these particles down to the ordinary breathing levels, so that they are inhaled into and irritate our air-passages. By the stillness of the air, and by bringing down the irritating particles which under ordinary circumstances float above us, fogs intensify the impurity of the air. It is this, and not

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their moisture, which constitutes their danger to bronchitics and other lung invalids.

On the subject of temperature not much remains to be said. It is influenced by so many considerations, principally by exposure and humidity, that, given these, the temperature may almost be deduced. The matter is one of simple thermometric measurement, and the recorded monthly means will give us nearly all we require. More important, however, than the monthly means, when they are to be obtained, are the means of monthly minima. The maxima are interesting and important, but from the point of view of the medical climatologist it is the minima which yield the most useful information. The two together will tell us not only to what level the ordinary temperature attains, but what its range is. In nearly all case of chronic invalidism extremes of temperature are undesirable; in many they are highly injurious.

The climate of these islands is characterized by extremes of temperature; and, however well we may recognise that such conditions conduce to the physical hardiness, and to the mental and moral characteristics of our race, we must also recognise that what may be for the benefit of man in the mass, is by no means necessarily so for the individual, especially if that individual be very young, very old, or very delicate. Those, therefore, who can be placed in these categories should have the matter of temperature studied for them, so that they can obtain as

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much warmth in the depth of winter and as much freshness in the height of summer as circumstances will permit. A judicious selection of climates at the various seasons is one of the most powerful therapeutic agents at our disposal in dealing with such cases.

Now let us endeavour to group these various factors, and state them in terms of the 'relaxing' and 'bracing,' which are so dearly beloved of the laity. To the term 'relaxing' I would prefer 'sedative,' as being more correct and, to medical ears, more expressive.

In a general way, then, and remembering always the existence of many and powerful modifying influences, we may say that, other things being equal, a sheltered situation will have a sedative, and an exposed situation a bracing, effect; that a low-lying place is relaxing, while an elevated place is stimulating; that a humid, and therefore equable, climate is sedative, and one which is dry, and therefore liable to extremes, is exciting. The type of the one may be taken as a low-lying inland valley, thoroughly sheltered from the cold winds, with a high relative humidity and its attendant equability of temperature and liability to mists; and of the other, a place with an elevation of about 1,000 feet, unprotected by neighbouring hills, with a low relative humidity and its attendant rarefaction of the air, absence of mist, and sudden and considerable variations of temperature.

Although it is not my intention to offer anything

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in the nature of a list of places affording particular climates, an instance or two is always helpful, so I select as good examples of bracing climates, Buxton, Ilkley, Strathpeffer, and the east coast watering-places in this country, and Davos and Les Avants in Switzerland. Of sedative climates in this country, Cheltenham and the watering-places on the south-west coast; and abroad, Arcachon, St. Jean de Luz, the island of Madeira, and the Canary Islands.

Speaking broadly, the physiological effect of a bracing climate is that the human machine is driven at high pressure; metabolism is increased, appetite is heightened, and mental and physical energy are augmented. A sedative climate produces the opposite effect. Here the 'wheels of being' are slow; metabolism is diminished, the desire and necessity for food are decreased, while physical and mental energy are depressed. The therapeutic effect of the one is comparable to that of ammoniated quinine; of the other, to that of bromide of potassium. And it is a fact worth remembering, that, in prescribing the climates one has as much cause to regret an error as one has in prescribing the drugs.

Let us now consider the question of the proper utilization of stimulating and sedative climates respectively. The problem, stated broadly, is this: What are the morbid conditions in which we can expect to obtain benefit from climates of either class? To provide an answer to this question it is only necessary to inquire: What are the morbid con-

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ditions in which we habitually prescribe drugs of either class? Now, when we consider the matter, we find that, although there are a good many patients for whom we prescribe stimulating and tonic drugs, there are not very many morbid states in which we prescribe them. The vast majority of these patients are suffering from diseases which could almost be counted on the fingers of one hand—anæmia, general debility, neurasthenia, dyspepsia, convalescence, certain types of tubercular disease, certain types of goutiness, and the ill-defined states of malnutrition in adolescents. It would, of course, be possible to extend this list, but in order to do so it would be necessary to introduce subdivisions and saving clauses innumerable.

The cases which are properly treated by stimulating and tonic drugs are precisely those, and those only, which are properly treated by stimulating and tonic climates. Of those already mentioned, I would say that slight degrees of general debility, of neurasthenia, convalescence in persons of sound constitution, and malnutrition in children, especially in children of a tubercular diathesis, afford the most typical and conspicuous examples of the conditions in which stimulating climates may be recommended with every confidence of success. The man who is below par and requires a holiday; the man of fairly robust constitution who is convalescing from typhoid, pneumonia, or influenza; the weakly anæmic girl with a tendency to enlargement of the glands in the neck—these are people whose vitality wants rousing, whose

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metabolism wants increasing, and in whom one can well afford to drive the machine at high pressure.

Inasmuch as bracing climates are more agreeable to most people than those which are sedative, it is a common experience that patients and their friends will put in a strong plea for a place where they may be 'braced up.' This is, nevertheless, a plea which must be resisted, unless it is quite certain that the case is one which demands increased metabolism, one in which it is perfectly safe to drive the machine at high pressure; because by far the greater proportion of patients suffering from disease, as distinguished from minor and symptomatic ailments, require not a bracing but a sedative climate. This is a rule which admits of few, if any, exceptions. Such exceptions as do exist are seen in those very protean diseases as tubercle, gout, and asthma. There are, doubtless, some degrees of phthisis, some types of gout, and several forms of asthma, which benefit conspicuously from bracing climates; but the degrees of phthisis are the slighter degrees, and the types of gout the less pronounced types, in which stimulating conditions may be tried without danger. Asthma, being merely a symptom, and not a disease *per se*, it cannot be considered as a condition which is properly treated by climatic methods. Even in the case of neurasthenia, which I have mentioned as one of the morbid states which may be advantageously treated by stimulating climates, it is of the utmost importance to remember that it is the slighter degrees only

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which are properly so treated. The severer forms have been tersely and quite correctly described as physiological bankruptcy, in which all the vital energies must be husbanded by every means in our power—in which the very last thing we can afford to do is to drive the machine at high pressure.

Now let us look at the other side of the picture, and consider for a moment the morbid conditions which are properly treated by sedative climates; the diseases in which the wheels of being, if they are to be kept going at all, must, above all things, be kept going slowly; the bodily states in which to drive the machine at high pressure means the rapid exhaustion of the steam and stoppage of the engine. The best and most typical example of this class is afforded by chronic renal disease, whether it be in the form of the large white kidney or the granular kidney. Here the indications are to save the crippled organs as much work as possible by increasing the output of the other emunctories—namely, the bowels and the skin. The bowels may safely be left to the care of the numberless laxatives and cathartics which are open to the practitioner who, as Dr. Goodhart expresses it, is sensitive to the influence of the Trade Winds; but here, again, the question of selecting the climatic resort from among the spas which offer special advantages in this respect may profitably engage attention.

The skin we must educate and encourage to perform the duties which it is now, probably for the first time,

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called upon to perform; and in this matter, too, the aid of baths and douches and massage is by no means to be despised. One of the chief characteristics of a sedative climate is its equability, its comparative freedom from seasonal and diurnal extremes; and this characteristic, be it remembered, is invariably associated with a high relative humidity. Some people talk glibly and gravely about a dry, equable climate. Such a climate, it need scarcely be said, does not and cannot exist, for the reason that dryness and equability are mutually exclusive; it would be as reasonable to talk about a fluid which was acid and yet alkaline.

Now, this condition of equability, with its attendant high relative humidity, is of the highest importance in the treatment of chronic renal disease, and both the equability and the high relative humidity have special features of value in this connection. As in chronic heart disease our most solemn warnings to the patient are directed against any sudden or violent muscular exertion, so in chronic renal disease our principal care should be the avoidance of any sudden or extreme changes of temperature—the one places an undue strain on the crippled heart; the other imposes an undue burden on the crippled kidneys. That is why equability of temperature is of so much value in these cases; it protects the kidneys more effectually than anything else can do against the strain of rapid and extreme variations of temperature.

Chronic renal disease may be regarded as the condition in which climatic treatment will yield the most

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gratifying, and not infrequently the most astonishing, results, and relaxing climates may be prescribed for this type of patient with the same confidence and assurance as we prescribe salicylate of sodium for the pains of acute rheumatism. As good instances of climates suitable to such cases, let me refer once more to Madeira, the Canary Islands, Arcachon, and St. Jean de Luz, abroad; and, at home, the watering-places on the south-west coast from Bournemouth to Land's End, remembering about these latter that the further west they are situated, the greater the humidity and the greater, consequently, the equability. The place among them with which I am best acquainted is Sidmouth, in Devonshire. It affords an excellent example of the qualities of this type of climate, and is well equipped in all matters which make for the comfort and convenience of visitors.

Not much remains to be said as to other morbid conditions which are suitably treated by sedative climates. If we recall the formula of the test which is to be applied in every case which presents itself, there is usually very little difficulty in arriving at a just conclusion in the majority of instances. This formula is: 'Can we afford to drive the machine at high pressure, or must we nurse the vital resources?'

I have already incidentally mentioned heart disease. Now, in view of our formula, it is not necessary to say that this is a condition which is not suited to bracing climates of any sort, and that it is eminently unsuited to climates of high altitude. These cases are now

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very frequently sent to spas where the Nauheim treatment is to be obtained, and although this form of treatment may have had too many claims put forward on its behalf, there can be no doubt whatever of its value in suitable cases. But if these patients are to enjoy the maximum of advantage from the treatment, the spa should be selected from among those situated in sedative climates. In this country all these advantages, both balneary and climatic, are to be obtained at Bath, in Somersetshire, where not only is the climate suitable, but the baths are among the most luxurious and best equipped in Europe.

Of functional and nervous diseases one has only to think of epilepsy, hysteria, and insomnia (if, indeed, the latter can properly be called a disease), for anyone to say at once to which type of climate such cases should be sent. These are emphatically conditions which no sane person would treat by stimulation; indeed, everyone treats them all with bromide mixtures, and it is to the climatic representatives of bromides—namely, humid, relaxing stations—that the climatologist directs those suffering from such complaints.

Among other diseases which are properly treated by sedative climates, it is well to lay stress upon bronchitis and emphysema. In acute bronchitis we moisten the air of the sick-room artificially by means of the bronchitis-kettle, and very grateful to the irritable air-passages such a proceeding invariably proves. In chronic bronchitis the moisture is equally

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grateful and beneficial, and can very easily be obtained in the humid climates of our south-west coast stations, where it is to be found combined with that purity of atmosphere which is so conspicuous by its absence in the ordinary sick-room. In emphysema we have in the lung, a condition which is exactly comparable to the state of the kidney in chronic interstitial nephritis, and a sedative climate proves as beneficial in the one as it does in the other. As long as too much is not demanded of the crippled organs by any attempts to drive the machine at high pressure, it is possible to insure to these sufferers both extended days and comparative comfort.

Under functional nervous conditions ought perhaps to have been included the many curious and unpleasant subjective sensations from which women suffer at the menopause. Such patients should never be stimulated, and if they can be induced to leave their ordinary surroundings for a sedative climate they will thereby do more to relieve their sufferings than by the taking of any drug in the Pharmacopœia, with the single exception of ichthyol, which seems, indeed, to be something in the nature of a specific in this condition.

It is not necessary to insist upon the fact that old people are not among those in whom any attempt should be made to drive the machine at high pressure. In a sheltered, relaxing valley near Sidmouth there is a small village called Sidbury, of which it is said by the natives that he who takes up his residence there

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may live as long as he likes. I am not quite sure about the living, but I can testify to the fact that he may exist for a number of years which to most of us seems very astonishing. Old people are certainly better away from large centres of busy life, and the best places for them to go to are the warm, equable, sedative stations, where there is plenty of sunshine.

So much, then, for the broad principles by which we should be guided in considering questions connected with change of air. When we come to closer quarters with the matter we generally find that it is desirable to associate change of climate with other therapeutic measures. Among these, what is comprehensively called spa treatment is of the first importance. It is obviously impossible to deal here with so large a subject in an exhaustive manner, so that no more is attempted than a few references to some of the best known of the mineral-water stations and their clinical indications.

Let us begin, then, with the best-known spa in the civilized world—namely, Carlsbad. The Carlsbad waters are described as alkaline, sulphated waters, which is merely a roundabout way of saying that their chief analyzable ingredients are the sulphate and bicarbonate of sodium. But it is unwise to attach too much importance to analyzable constituents, so let us proceed to consider what are the kinds of cases which may advantageously be sent to the Carlsbad for a 'cure.'

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If one goes there in full season, the first thing that strikes one is the enormous number of unduly fat people that one comes across—a fact which provides the key to the main indication for selecting from among one's patients those who will derive most benefit from a 'cure.' It is not that any very special point is made of the treatment of obesity there, but it is a fact that the place has specialized, so to speak, on diseases or conditions with which obesity is commonly associated. Chief among these are affections of the liver. In patients who have had one or two severe attacks of biliary colic the question often arises as to whether one ought not to recommend operation. The operation, as we know, is liable to be a serious matter, and we hesitate, consequently, to recommend it unless we are at the end of our resources. Now, in these cases, before any appeal is made to the knife, treatment at Carlsbad is an expedient which should always be tried, with this reservation, however, that it is not well without due consideration to send a thin patient there; nor, on account of the length of the journey and the severity of the treatment, is it ever wise to recommend the place to those who have been much exhausted by their attacks. Carlsbad and Marienbad are suited only to the very robust, to the sthenic type of invalid, and if treatment on the Carlsbad pattern is desired for those who are not robust, it may be obtained at Kissingen, Homburg, Wiesbaden, and elsewhere. The man who habitually overeats himself, who takes too

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little exercise and too much alcohol, whose liver is enlarged, who suffers from piles, and is learned in *menus*—that is the patient who may be sent to Carlsbad and Marienbad with every confidence. These two spas are generally bracketed together because they lie quite close to one another, and there is little except fancy to choose between them. The waters at Carlsbad are hot; those at Marienbad are cold.

Now let us consider another world-famous spa, Vichy, and compare its main features with the foregoing. If we examine the analyses of the water we notice at once that, whereas Carlsbad contains a considerable amount of sodium sulphate together with sodium bicarbonate, Vichy has practically only the sodium bicarbonate to offer. This might easily lead to the belief that there would be a very considerable difference in the kinds of cases for which the two places respectively are indicated. And yet it is not so. Broadly speaking, the maladies which are suitably treated at Carlsbad are equally suitably treated at Vichy. At both places gastric, hepatic, and digestive disorders in patients of the sthenic type are those to which the chief attention is paid. At both, a great feature is made of the management of diabetes and affections of the liver; the contraindications are the same at both, and the reputation of both rests upon a foundation of practical experience extending over generations. This being so, one may well ask why it is that in this country we hear so much of Carlsbad and so

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little of Vichy. The answer is simple. It is merely a question of fashion. The members of our own Royal House have done much to popularize the former, whereas the latter has enjoyed no similar advantage. I repeat, therefore, that in spite of the difference in the chemical composition of their waters, there is practically nothing to choose between these two spas in the efficacy of the treatment in suitable cases. A patient who will do well at Carlsbad will do equally well at Vichy. This fact is interesting from many points of view, and particularly important as illustrating the futility of classifications based upon mere chemical analysis. Nevertheless, there are differences between the two places, some of which it is very necessary to bear in mind.

In a general way it may be said that the course at Vichy is less severe than at Carlsbad, so that of the two, the former is the better suited to women and to men of nervous organization. This consideration is emphasized by the fact that Carlsbad's elevation is as much as 1,250 feet, whereas that of Vichy is moderate, being 750 only. A chemical difference which, in view of Widal's work,[1] would seem to be of some considerable importance, is the fact that Carlsbad water contains chloride of sodium to the amount of 2·50 grammes per mille, whereas at Vichy this salt is present in small quantities only—viz., ·050 gramme per mille. So far as the accessories to the drinking of the waters are concerned, such as baths massage,

[1] *Vide* 'Goutines s,' Chapter V.

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electrical and mechanical appliances, Vichy certainly bears the palm, the Establishment at this spa being the finest and most luxuriously equipped in the world. The accommodation at both places is excellent, but the popularity of both renders it necessary to secure rooms well in advance of the date of the proposed visit.

In connection with patients of the Carlsbad-Vichy type, but of an organization not sufficiently robust for Carlsbad treatment, reference has been made to Kissingen, Homburg and Wiesbaden. Let us take one of these, Homburg, a place which also owes much of its popularity in this country to the patronage of the Royal Family, and consider it in connection with another French spa—namely, Brides-les-Bains. Superficially, the two places have little enough in common. The one is a fashionable, cosmopolitan, accessible spa close to Frankfurt and the Rhine, and hence on the high-road to everywhere; the other is a comparatively unknown, essentially French, and, until recently, an inaccessible little place in the Savoy Alps, not very far from Aix-les-Bains. And yet, on the merits of the complaint, as distinguished from the patient who is the subject of the complaint, it would not be easy to make up one's mind as to which would be the more suitable place for treatment. The composition of the waters at the two places is essentially different, and the methods of using them are by no means identical; nevertheless, a course at either would show excellent results in those cases of gastric, hepatic, and metabolic disturbances for which Carlsbad or

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Vichy would be too severe. The fat man is as much in evidence at Brides as he is at Carlsbad or Vichy, and if he seems to be rather less obtrusive at Homburg, the reason is that his proportions become obscured by the numbers of people who visit the place as mere pleasure-seekers.

The equipment of Brides-les-Bains for all forms of health-resort treatment is very complete. At Brides itself they drink the slightly purgative waters; at Salin-Moutiers, two miles distant and connected with Brides by electric tramway, there is an excellent bathing establishment, with strong brine waters; whilst at Prolagnon, half-way up the mountain, there is a delightful hotel, situated at a very considerable altitude, where a climatic 'after-cure' may be enjoyed in most peaceful and beautiful surroundings. Brides is too little known in this country. This is due partly, no doubt, to the fact that until recently it was inaccessible. Now, however, it is so no longer. It may be reached in twenty-three hours from London (Carlsbad takes thirty-one hours, Vichy fourteen hours, and Homburg nineteen hours). The climate, the society, the surroundings, and the methods of treatment are all that can be desired, especially for those who wish to avoid the fashionable crowds which throng to the better known places.

A spa of a character altogether different from the foregoing is Contrexéville, in the Vosges Mountains, about eighteen hours from London, *viâ* Paris. If Carlsbad and Vichy may be called pre-eminently the

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hepatic spas, Contrexéville and Evian may with equal truth be called the renal spas. We are not now concerned with the chemical constituents of the waters, but it is pertinent to recall that the principal ingredients in those of Contrexéville are the sulphate and bicarbonate of calcium; hence the name 'earthy waters' which is generally applied to them.

Now, on general principles the salts of calcium do not appeal to one as exactly the salts which should be selected for administration to patients suffering from renal and vesical calculi, and yet it is precisely in these conditions that the waters of Contrexéville are most highly prized. The reputation of Contrexéville rests on a solid basis of extended clinical experience. When we have discounted the improbable, but by no means impossible, stories of the spontaneous breaking up of large vesical calculi as the result of taking the waters, there remains an amount of reliable testimony, which is not to be gainsaid, to the really wonderful effect of the waters in ridding the system not only of renal gravel, but also of the tendency to its formation. The waters are diuretic, and in large doses laxative, but they would seem, in addition, to exercise a solvent as well as an antiseptic influence.

The forms of gout, other than arthritic, which are variously called goutiness, suppressed gout, and the uric acid diathesis, are accompanied, it is supposed, by some degree of renal inadequacy; and, owing to the flushing and other effects of the waters, such

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conditions do well at Contrexéville. There is no spa which may be recommended with more confidence, not only in such conditions, but in all morbid states of the urinary organs which are not caused by cancer, tubercle, and other incurable disease. The physicians claim to make a speciality of chronic nephritis, both tubal and interstitial; and if the claim is a good one, which there is reason to believe it is, the beneficial effects are not in any way due to the climatic conditions, because, being of an essentially bracing character (the place is situated at an altitude of 1,100 feet), these would, other things being equal, be inimical to renal troubles.

To Contrexéville, then, may be advised those patients who suffer from renal colic, from chronic nephritis, and from chronic cystitis, and those who are convalescing from operations upon the urinary tract. There is another kind of patient who may be advised to this spa with great hopefulness—a kind of patient who is very liable to tax our ingenuity to the utmost, and on account of whom the medical man may very easily, and very unjustly, lose a great deal of credit. I mean the child who suffers from persistent nocturnal enuresis. These cases may be treated at home by the imported water, and are very often successfully so treated; but it is always preferable to send them, if possible, to the fountain-head.

Martigny and Vittel, also in the Vosges Mountains, have practically the same waters as Contrexéville,

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and from a therapeutic standpoint there is little to choose between them.

There is a renal spa of a different class which, though less famous than the foregoing, is destined very shortly to become a very serious rival to them —namely, Evian. This station was until recently comparatively little known, but the energy and enterprise of those responsible for its prosperity have so admirably equipped it, both hygienically and balneologically, that it is now in a position to challenge comparison with the most successful of its congeners.

Evian is charmingly situated about the middle of the southern (the French) shore of the Lake of Geneva, almost opposite Lausanne. Its climatic conditions constitute it an exceptionally agreeable summer resort of a mildly bracing character, suitable for sickly children and adults in search of an after-cure. The recently-erected bathing establishment is replete with facilities for every modern balneary method, including electro-therapeutics and Zander exercises, thus rendering the station well adapted to arthritic and gouty patients, for whom such treatment is so useful. It is, however, the waters as used for drinking which has brought the place into prominence. These waters are very feebly mineralized, but in virtue of some property, not yet definitely ascertained, they act in a very special manner upon the renal output, not only very largely increasing the quantity, but very materially benefiting the quality. They

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also exercise a similar flushing effect upon the liver. The indications for their use are, therefore, any condition, especially any blood condition, which is caused by excess of intake or deficiency of output—*e.g.*, goutiness, renal inadequacy, abdominal plethora, high arterial tension, renal and hepatic colic, and the like. The results of treatment at Evian are most satisfactory—more satisfactory, perhaps, than at any of the other spas of a similar character.

Of all forms of natural mineral waters, it is probable that those containing iron have been appreciated the longest. There are many iron-water spas in Europe, but the best known are Schwalbach, Spa, and St. Moritz. In all these the contained salt of iron is the bicarbonate, and they all contain in addition a fair quantity of free carbonic acid gas, which is believed to facilitate the absorption of the iron. Of the three places, St. Moritz has one definite advantage over the other two—namely, its elevation, which amounts to nearly 6,000 feet. High altitudes, we now know, increase the number of red corpuscles in the blood, and they have consequently been prescribed with considerable success in anæmic states. At St. Moritz, in addition to the high altitude, there is a mineral water which, though not so rich in iron as some, is not inferior in efficacy to any other in Europe; and this combination of factors is calculated to bring about better results than either alone. Owing to its notoriety as a winter resort for consumptives, St. Moritz's reputation as

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a chalybeate spa has recently become somewhat obscured, and one has to be rather careful in suggesting it, for patients are liable to assume that a suspicion of phthisis underlies the recommendation.

In the matter of elevation there is nothing to choose between Spa and Schwalbach: Spa is 1,000 feet above sea-level, Schwalbach rather less. Spa is much the more accessible from this country, and there is more life there than there is at Schwalbach. In favour of the latter, however, may be urged its peace, its beautiful woodland surroundings, and the admirable management of the place as a pure health resort. The patients who should be sent to these places are, of course, those suffering from anæmia, especially chlorosis. In the case of St. Moritz, its great elevation should warn us to be careful about sending excitable people there, and to avoid even the mention of it if the case be one in which the kidneys are deranged. The typical case for this spa is the fat, chlorotic girl of lymphatic mien and lazy habits, who has no organic disease. To Spa or Schwalbach may be recommended anyone whom a course of iron would suit. And in connection with these places it is well to remember that improvement which has resulted from treatment at a chalybeate spa is always of much longer duration than one which follows a course of iron at home, so that in cases of constantly-recurring chlorosis a course at one of these resorts should always be tried.

It sometimes happens that one member of a family,

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say the father, is suffering from a condition of the Carlsbad-Vichy type, while another, say the daughter, is the subject of an affection of the Schwalbach type, and that they wish to go to the same spa. In such cases it is always well to keep Kissingen in mind. The place has already been mentioned as an alternative to Carlsbad or Vichy for patients who would find the course at the latter too severe. It is a charming place, very well managed, and furnished with every convenience for balneary and crenological treatment. In addition to its own common salt waters, however, those of a neighbouring chalybeate spring are to be obtained there. The latter are brought in pipes from their source at Bocklet, a village four miles away, and are very useful in the same conditions as the waters of St. Moritz, Schwalbach, and Spa. The Bocklet waters have an establishment all to themselves at the village, but the installation is primitive compared to the comfort and luxury of Kissingen.

The consideration of sulphur-water spas would afford sufficient material for a single chapter, and that by no means a short one. At present I can only point out that these spas have, many of them, very little in common except the presence of sulphuretted hydrogen in their waters. They form a very large group, and if we recall those which are best known—Aix-les-Bains, Aix-la-Chapelle, Luchon, Harrogate, Cauterets—and consider the diseases in the treatment of which each enjoys its reputation, there is no escaping the conclusion that the special virtue of each resides

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in some ingredient or activity other than the presence of the sulphur compound which gives them a common and characteristic odour. Even if we narrow the issue, and consider only the group of sulphur-water spas in the Pyrenees—spas which are close together and whose analyzable constituents differ but very slightly—and inquire in what diseases each has specialized, we must arrive at the same conclusion. For example, Luchon has a reputation in retrocedent gout, and in diseases of the skin. Cauterets has made affections of the larynx a speciality, and is thronged in consequence with singers, orators, clergymen, and all those whose vocal cords are much used. Eaux Bonnes is much visited by those suffering from pulmonary affections, particularly emphysema and phthisis. Eaux Chaudes is a resort more especially for women suffering from uterine troubles, and is credited with having cured sterility in the Queen of Navarre, the mother of Henri IV. St. Sauveur is also a ladies' spa, which is said to have remedied sterility in another famous case—namely, the Empress Eugènie. There are in this group other spas with different reputations, but it is useless to multiply instances. Analytically they have their H_2S in common; clinically they have practically nothing.

Since the introduction of the Nauheim treatment a good deal has been said and written on the subject of the spa treatment of cardio-vascular disorders, and many extravagant claims have been put forward in

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favour of such treatment. The truth is, however, that the methods which are commonly associated with the name Nauheim—that is, cold and tepid effervescent baths, and resisted exercises—are of very limited application. Those observers who have had opportunities for forming unprejudiced opinions on the subject are agreed that there is nothing to add to the estimate of the treatment expressed by Sir William Broadbent in the following passage soon after the system was first introduced into this country:

'In cases of cardiac dilatation from loss of tone of the heart-muscle after influenza, or some depressing disease, it (the system) may be of great service, and effect a cure where drugs and other treatment have failed; in many cases of functional and neurotic heart disease, which are very common, and are difficult to deal with, it may also give satisfactory results. In valvular disease it is, of course, unnecessary when compensation is established, and no symptoms are present; when compensation has completely broken down it is not advisable, as rest in bed and suitable treatment by other means will be more efficacious. In cases of mitral disease, more especially mitral stenosis, when compensation is just maintained with difficulty, and when the degree of stenosis is such that increased contractile power of the right ventricle induced by digitalis would be useless and harmful, it may be of great service. In aortic disease it is not advisable, owing to the risk of syncopal attacks, though when compensation is breaking down and

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mitral symptoms are present it may sometimes yield good results.'

With regard to this treatment, it should be remembered that it can be obtained elsewhere than at Nauheim. At Buxton, Bath, Harrogate, Sidmouth, Leamington, and Llangammarch, to mention but a few of our own health resorts, the baths and exercises can be carried out with intelligence and circumspection by physicians experienced in the treatment; and in London, as well as in a great many of the large provincial centres, the system can be applied in institutions and nursing homes by well-trained attendants. Cardiopaths bear journeys, especially sea-journeys, badly, and there is seldom any excuse for despatching patients from this country, even when they can be included in Sir William Broadbent's category, to a place which entails under the most favourable conditions a transit of twenty-four hours' duration.

A place of which, since the meteoric rise of Nauheim, one hears less than its merits deserve, is Bourbon-Lancy, in the centre of France, not very far from Vichy. This station lays no claim to miraculous effects; the physicians are, indeed, very insistent upon the fact that they have nothing to offer in cases of broken compensation, of mitral stenosis of long standing, of definite arterio-sclerosis, of atheroma, or of aneurism, and that their sphere of usefulness is confined to compensated organic lesions of rheumatic origin. In these, by use of the

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waters, the underlying diathesis is corrected, and recurrences are thus provided against; whilst by general régime, supplemented by mechanical appliances, the physical condition is so cultivated as to place as little strain as possible on the crippled organ. The results of sending children and young people with compensated mitral regurgitation, in whom it is still possible to adjust the general physical condition to the impaired cardiac capacity, to Bourbon-Lancy, are often brilliant.

Such cases do best when sent there from six months to a year after the commencement of the lesion, but all cardiac disturbances which occur during growth, especially those which are complicated with or occasioned by a malformed thorax, are eminently suited to the treatment. The place is agreeably situated (800 feet), and, though sufficiently interesting, it is unexciting.

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CHAPTER VII.

GENERAL HEALTH.

To obtain clear ideas on the subject of general health, it is necessary to realize two very obvious, but frequently overlooked, facts. The first is that, whatever his intellectual and moral development may be, man is essentially an animal, primarily adapted to certain conditions and surroundings; and the other is that the needs of civilization have imposed upon him the necessity for, or the temptation to, certain modifications of these conditions and surroundings. The problem which presents itself is this: How far and in what manner can the modifications be effected without impairing his animal powers—that is, his physiological or animal efficiency?

That man was originally a semi-nude animal, living in the open air, who obtained his food by tilling the ground and hunting his game, may be taken as beyond controversy. These were the conditions and surroundings to which he was originally adapted. He has, in course of evolution, become a very much beclothed animal, who lives in houses, and obtains his food less by the sweat of his brow than by the

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work of his brain. This change of environment ought, logically, to entail corresponding changes in his habits.

Certain changes have, doubtless, occurred, but they have for the most part been dictated, not by considerations of physiological suitability, but by those of pleasure or convenience. Departures from health are almost always due to offences against man's animal or physiological requirements; and if we would fully realize what those requirements are, we must endeavour as far as possible to understand his primeval conditions and surroundings, untrammelled by the mists in which his pleasures or his convenience have enveloped him. This is the only scientific attitude from which to approach the subject of his general health; for unless a scheme of living is in consonance with these general principles, it must necessarily rest upon a basis which is theoretical, and therefore insecure. The whole subject is too large to permit of its consideration in any real detail, but some aspects of the matter, approached from this point of view, may be useful in illustrating the advantage of appealing to Nature for guidance rather than to fashion.

There can be no doubt that man was intended to be a working animal; and by work is meant something which must be done day in, day out, whether the doing accords with the inclination or not. Physiological efficiency in every part of the body is dependent upon the regular exercise of function, and

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what is true of each part is necessarily true of the whole. The man who does not work is never a reliable person, and he is seldom a healthy one—at any rate, for long. The normal individual demands legitimate outlets for his energy, and if he does not obtain them the energy becomes diverted into illegitimate channels. The majority of alcoholics, of hypochondriacs, and of neurotics, are people with nothing to do; and one, at any rate, of the reasons why women are more prone than men to functional nervous ebullitions is that they are, compared to the men of the same class, the leisured portion of the community.

To be healthy, then, a man should work. It is, of course, not an easy matter to compel a person to work who has no financial incentive thereto; but there is plenty of voluntary work for those who have the leisure to devote to it, and it would be a good thing if all members of the profession were to impress upon idlers the incontrovertible fact that idleness is by far the most potent enemy to healthy existence.

Whether or not man was intended by Nature to be a naked animal is a subject which need scarcely detain us. The climate of the temperate zone and the exigencies of modern life have imposed a certain measure of covering upon all civilized races. The question for us to consider is whether the nature and the amount of the **CLOTHING** which fashion now prescribes are such as to be conducive to man's

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physiological efficiency. To elucidate this question we must glance for a moment at two of the functions of that important organ the skin.

The first of these to be considered is the power in virtue of which it contracts to a cold influence and relaxes to a warm influence. This power, in common with all the other vital powers, is dependent for its integrity upon its proper exercise. Here, as elsewhere, use gives rise to increase of function, disuse to abeyance, or loss of function. It is, therefore, obvious that the amount of clothing should be so regulated as not only not to interfere with this power, but, on the contrary, to afford every reasonable opportunity for its exercise. And we must not lose sight of the fact that the degree of efficiency of this function is a measure of the efficiency of the skin as a whole, because when one function of an organ suffers, the efficiency of the others becomes impaired. The right amount of clothing for a healthy person, therefore, is that which, while sufficient to protect the body from the harmful exposure to temperatures in which contraction cannot prevent undue loss of heat, is nevertheless not such as to protect the body from such a degree of cold as is necessary to the proper activity of the contractile power. In other words, the proper, the ideal, amount of clothing for a healthy person is the minimum which will protect that person from undue depression of temperature while following his usual employment.

If these conclusions, which are indeed sufficiently

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obvious, be correct, it is clear that the great majority of people are grossly overclothed. To judge by the general practice in this matter, one would be driven to suppose that the object to be attained was the avoidance, not of harmful degrees of cold, but of all degrees of cold. This practice, objectionable as it is in the case of adults, amounts to something in the nature of a hygienic crime where children are concerned; for in addition to the interference with adequate metabolism which it causes in young and old alike, in children it militates against healthy development. The overclothed child has little incentive to run about and exercise his limbs and his lungs in the manner essential to normal animal evolution, and so it happens that rickets, adenoids and ill-formed chests are, among the children of the well-to-do classes, the rule rather than the exception.

Parents should be reminded at every possible opportunity that their children are primarily young animals, and that the practice of coddling inevitably means defective development, with its consequent physical and mental degeneracy. A full measure of cold should always be allowed to reach the skins of young people. It keeps the cutaneous contractile power in good working order, and incites the children themselves to the muscular exercise upon which their proper development depends.

One of the best means of exercising this function of the skin is the cold morning tub. The exact temperature of the water to be used is a matter of

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some importance, but it is one which can be decided only after a review of all the circumstances connected with each case. Speaking generally, it should be cold, but never so cold as to leave the bather chilled and miserable. The fashion of the moment prescribes the use of full-length baths. There is no objection to these in the case of healthy people, but for those who are weakly, the sitz bath is infinitely preferable. In the full-length bath all the blood is driven inwards to the internal organs, whereas in the sitz bath, the cold affusion being applied to various parts of the surface in turns, the determination of blood inwards is less sudden.

One of the advantages of the cold bath is that the whole cutaneous surface is thereby exposed to the air at least once daily. To reap this advantage to the full, care should be taken that the atmosphere in the bath-room is as pure as possible, and this is best secured by the open window. The cold bath has other incidental advantages. One is that to obtain the desired reaction people usually apply friction to the skin with a rough towel. This entails a certain amount of exercise which is altogether to the good, and it results in a general stimulation of the whole cutaneous surface, which is highly conducive to its physiological efficiency.

One of the cutaneous appendages—namely, the hair—often suffers from want of adequate stimulation. There has been a good deal of ingenious speculation as to the causes of baldness, especially

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as to why it should be comparatively common in men and relatively rare in women. The absence of physiological stimulation in the one case and its presence in the other supplies in reality the solution of the riddle. Men cut their hair short, and so deprive the follicles of the stimulus which the mere weight of long hair affords. In addition, hair which is long entails a great deal more brushing and general attention than hair which is short, so that the hair follicles in man are deprived of a double measure of stimulus. If these facts were more generally recognised and acted upon, there would be less premature baldness than there now is. The drying process after the cold morning tub affords an excellent opportunity for thoroughly massaging the scalp by moving it freely on the underlying bone. If after this the brush is used forcibly enough to redden the skin, premature loss of hair is very unlikely to occur.

The drying process should also be utilized for the purpose of applying friction to the ears. By this means the sclerotic process which so often gives rise to premature deafness may be indefinitely postponed.

The other function of the skin which it is necessary to consider in this connection is the excretory function. The cutaneous excretions are discharged either as fluid or watery vapour, and it is, therefore, very properly held that the clothing to be worn in contact with the cutaneous surface should be of an absorbent nature. The material should have the power, that is, of rapidly taking up the moisture. Curiously enough,

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the material which is all but universally prescribed for underwear—namely, flannel or wool—is precisely the one which has the least capacity for absorption. Flannel is a warm material, as it is called. No material is, of course, warm *per se*. All warmth is derived from the body itself, and one material is warmer than another in virtue of the fact that one is a worse conductor of heat than another. Flannel is a non-conductor of heat, by reason of the air-spaces it contains, because air is a bad conductor; but flannel is not absorbent. Silk, linen, and cotton are in a different category. These are all highly absorbent materials, but as their fibres contain no air-spaces they are not 'warm.' It is, however, possible to manufacture them in such a way that they shall contain air-spaces, and thus become efficient non-conductors; whereas it is quite impossible so to treat flannel as to render it absorbent.

The obvious inference is that flannel is not a suitable material for underwear, and that silk, linen, and cotton can all be rendered very suitable by causing their fibres to contain the air-spaces on which the reputation of flannel rests. These materials are all now manufactured on these principles, so that there is no longer any excuse for advising people to utilize wool or flannel for underwear. These two substances, which are in reality the same thing, as being practically unabsorbent, are inimical to healthy animal existence. When worn next the skin they imprison the moisture, and thus give rise to

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deficient evaporation, diminished metabolism, and great disinclination to mental and bodily exertion.[1]

General physiological efficiency is dependent more upon an **ADEQUATE SUPPLY OF OXYGEN** to the tissues than upon anything else. No one is capable of his best work unless he is able to obtain air of normal purity, and any habitual falling short of the normal lessens the general powers of resistance, and leads to disease. The normal standard of purity is given by authorities as 21 per cent. of oxygen and ·04 per cent. of CO_2, and they go on to say that a rise of CO_2 to ·08 per cent. is distinctly harmful. The normal standard is obtained from the examination of air in the country, on mountains, at sea, and in open spaces of towns, and it is found to be remarkably uniform in all portions of the globe, inhabited and uninhabited. The air in houses falls short of this standard, the proportion of CO_2 very commonly reaching ·05 per cent., and where a large number of people are gathered together, as in churches, theatres, concert-rooms, and the like, it not infrequently reaches ·08 per cent., or, indeed, ·1 per cent., either of which percentages represents gross impurity. The degree of impurity of an atmosphere is stated in terms of CO_2, because the amount of this gas is comparatively easy of estima-

[1] For a detailed discussion of this question see 'Three Lectures on Personal Hygiene,' *Clinical Journal*, July 6, 13, and August 10, 1904; 'Some Aspects of Obesity,' *Practitioner* May, 1904; and 'Rheumatics in Relation to Climate,' *Birmingham Medical Review*, May, 1905.

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tion. The practice has one great disadvantage, however, which is that it is apt to give rise to the supposition that the impurity consists solely in the presence of an excess of CO_2, and we are liable, in consequence, to forget the far more deleterious substances which an impure air contains. These substances comprise organic matters, watery vapour, bacteria, and decomposing organic matter given off by the skin and lungs. It seems necessary occasionally to remind ourselves that the skin and lungs are excretory organs, the degree and importance of whose activities it is, on account of their unobtrusive nature, very easy to underestimate.

It is unnecessary to attempt any enumeration of the diseases and morbid states which are directly due to vitiation of the atmosphere.[1] When it has been said that such an atmosphere lessens the vital resistance to the attacks of the bacteria, which at the same time it supplies in great abundance, all has been said that is requisite for the appreciation of the paramount necessity for the maintenance, in the highest possible state of purity, of the atmosphere in which each one finds himself.

And this is a matter in which a very reasonable complaint may be lodged against the profession as a whole. In spite of the emphasis which has recently been laid upon the importance of fresh air in the brilliant results obtained thereby in the treatment of

[1] See 'Maladies caused by the Air we Breathe,' by Dr. Thomas Oliver (Baillière, 1906).

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phthisis, medical men, as a rule, are far too tolerant in their patients, and in the public generally, of impure and even grossly vitiated atmospheres. This tolerance is due in a large measure to the persistence of what may be called the chill theory—the theory, that is, by which any morbid condition whose etiology is obscure is attributed to the action of cold or chill.

It is not very long since phthisis, pneumonia, and influenza were confidently stated to be due to chill, and there are still some people who believe in pleurisy *a frigore*. In times still more remote, almost all diseases were deemed the result of chill. It is not surprising, therefore, that in the lay mind the word should suggest some obscure yet serious menace, nor that every precaution should be taken to guard against so deadly and ubiquitous an enemy. Among the causes of chill, draughts are always given the first place. To sit in a draught is regarded by many people who are otherwise sane and reasonable as the most unwise and dangerous proceeding, not because it is unpleasant, but because it is directly calculated to lead to serious disease.

There is not only no justification for this view, but it is diametrically opposed to what we now know to be the truth. The majority of diseases are due to microbic invasion: microbes of all sorts abound in polluted atmosphere, and there is no means of preventing an atmosphere from becoming polluted except by the admission of fresh air. The admission of fresh air necessarily produces a draught, so that

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it is quite obvious that we have to choose between a draught, which is salutary, and stagnation of the atmosphere, which is deadly.

If the open-air treatment of phthisis has established anything, it has proved beyond all cavil that currents of air are not injurious. The patients at sanatoria live, as I have heard it expressed, in a gale of wind, and it is a fact that when they return from these institutions people are particularly intolerant of anything in the nature of stuffiness. These patients, we must remember, are what the French call *poitrinaires*—lung sufferers—and are therefore drawn from amongst those to whom, according to the chill theory, draughts are most deadly.

The success of the open-air system is in reality the *reductio ad absurdum* of the chill theory. Extreme cases are taken, not of the disease, of course, but of those who have delicate and debilitated air-passages, and who are therefore susceptible above all others to the supposed baneful effects of draughts. They are taken generally from the heart of a draught-eschewing household, and are suddenly, even in the depths of winter, deliberately and of malice aforethought subjected to a system in which exposure to draughts is the leading and essential feature. And what is the result? If there were the slightest basis of truth in the chill theory, they would die like flies; but, instead of doing so, they not only continue to live, but they increase in vigour and in weight, and their disease becomes arrested. No

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more convincing proof could possibly be afforded of the baselessness of this ignorant and pernicious fallacy which is gnawing at the vitals of the community.

The moral of this is simple enough. We cannot all live in open-air sanatoria, even if we would, but we can all put in practice the principles of which these places have established the correctness and the value. It is the duty of the profession to instruct the public in the prophylactic aspect of the matter, and to educate people into realizing that tuberculosis is only one, even though it be the most important one, of many evils which inevitably follow in the wake of polluted air, and that a pure, clean atmosphere is as essential to the maintenance of healthy lungs as pure, clean water is to the preservation of healthy intestines. It is unnecessary to enter into detail on this subject. People can only be weaned from the chill theory by having it pointed out to them that those who practise it are unhealthy, and by being made to experience the superiority of the effects of fresh air, however productive of draughts its ingress may be.

Without adequate ventilation there can be no such thing as physiological efficiency, and in the present method of house construction the only means to adequate ventilation is the open window. And the window should be kept open day and night, not occasionally only, nor 'a little bit at the top' (the virtues of which little bit being sadly marred by

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drawn blinds, well-secured shutters, and heavily-draped curtains), but sufficiently open to provide for that really effective circulation of the air upon which healthy animal existence necessarily depends.

The importance of **DIET** in the maintenance of health is now very generally admitted, the difficulty being to decide between the merits of the various rival systems which are advocated with considerable ability and much insistency by their respective authors. Dr. Alexander Haig[1] asks us to believe that any uric-acid-forming food is a slow poison, and invites us in consequence to delete from our dietary not only all fish, fowl, game, and meat, but also such vegetables as peas, beans, lentils, asparagus, onions, together with oatmeal, tea, and coffee. Dr. Hare,[2] on the other hand, brings a serious indictment against carbohydrates, and warns us to eschew them if we would avoid gout, asthma, migraine, and other evils. Dr. Chittenden[3] has made experiments to show that the main fault in our present system of dietetics is that we have hitherto overestimated by one-half the amount of proteid which is necessary to full mental and bodily activity, and that we can attain to real physiological economy only by reducing our intake under this head. Mr. Van Someren[4] insists that inadequate mastication is the root of all dietetic evil,

[1] 'Uric Acid in the Causation of Disease.'
[2] 'The Food Factor in Disease.'
[3] 'Physiological Economy,' etc.
[4] *British Medical Journal*, October 12, 1901.

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and that every mouthful should be masticated not thirty-two times only, but until the mass is both fluid and tasteless.

All these writers—and each of them has many followers and co-workers—advance their various theories with great skill, and illustrate them by convincing cases. It is obvious, however, that they cannot all be right, and that to escape from bewilderment on the subject it is necessary to find a common denominator, a platform on which each can take his stand side by side with the other. Such a platform would seem to be provided by the proposition that the gravamen of the charge against the existing admittedly faulty system is that it leads in one form or another to surfeit. Dr. Haig, Dr. Chittenden, and Mr. Van Someren, either explicitly or by implication, condemn the use of food which has been obtained by the taking of life—food, that is, through which blood has circulated. They are, in fact, to a large extent, lacto-vegetarians. Dr. Haig's *index expurgatorius* is exceedingly comprehensive, but, then, it is the outcome of a theory—that, namely, which attributes to the action of uric acid the responsibility for the majority of complaints with which the human body is afflicted. This theory has had a great vogue not only with the profession, but with the public, but it is, nevertheless, one which it is very difficult to sustain.

It is admitted that unexcreted nitrogenous waste products are highly deleterious, and it is undeniable

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that uric acid is one of these. But, although it is the most easily identified and measured, it is by no means the only one, and to use its ease of identification as an argument in favour of its sole responsibility is as fallacious as it would be to suppose that carbonic acid gas constituted the sole cause of the pollution of an atmosphere in which it was present in excess. Dr. Haig's diet, then, if it succeeds, as in many cases it undoubtedly does, succeeds for reasons other than those which are advanced in its favour.

It is a matter of importance to determine how far these systems can be reconciled with the incontrovertible fact that primeval man was to a very large extent a carnivorous animal. The matter would seem to stand thus: Primeval man was nomadic, and depended for his substance largely upon hunting, and other forms of vigorous muscular exercise, which enabled him to digest and dispose of large quantities of animal food.[1] In course of time he has become stationary and even sedentary, so that the muscular exercise which justified, and even perhaps necessitated, his carnivorous habits is no longer an essential portion of his existence. Thus it comes about that he is now physiologically unable to deal with foods of any sort, but especially with flesh foods, in anything like the same quantity as formerly. The muscles are the great furnaces in which foods are burned, and if the furnace burns low the foods are suboxidized. The

[1] Dr. Harry Campbell: 'A Lecture on Diet,' *Clinical Journal*, March 14, 1906.

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fuel, instead of being burned to ash and discharged, is converted into cinder and retained. There are two ways of meeting such a difficulty—the one by increasing the oxidation, the other by diminishing the fuel. In the case of the ordinary twentieth-century man the former is practically impossible, so that the physician and the hygienist must have recourse to the latter.

Of course, there are enormous personal differences in the individual capacity for dealing with excessive food, differences as striking and as inexplicable as those which exist in the matter of stature; but there seems to be no doubt that each succeeding generation becomes less able than its predecessor to cope with, and adequately to dispose of, a diet which in quantity as well as quality is an imitation of that to which primeval man accustomed the race.

The exigencies of our present mode of life being what they are, it seems necessary that we should seek to adapt our dietetic habits thereto, and our guide in this matter, as in all others, should be the attainment of physiological efficiency. A truly scientific working standard could be arrived at only by gauging the irreducible minimum upon which full physiological efficiency could be maintained. For various reasons, which include personal, racial and climatic differences, such a standard is beyond our reach, but inasmuch as food is agreeable, it is safe to assume that such dietetic errors as are habitually committed arise from excess rather than deficiency of its consumption.

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The systems of diet above referred to have this in common, that they aim at a general reduction of intake. Most of them, it has been shown, provide for the abolition of flesh foods.

Now, this last arises partly on account of the fact that some individuals, an increasing number perhaps, are unable to consume such foods without suffering from troublesome symptoms; but it is also due to the stimulating properties of such foods, to the effect which they produce in augmenting the whole quantity of intake—the provocation, that is, of the insidious 'appetite which comes with eating.' The foods of a lacto-vegetarian régime, if they possess this tendency at all, possess it in a very minor degree; so that one, at any rate, of the advantages of such a régime is that there is, in those that follow it, much less likelihood of the evils of over-alimentation than there is in the case of the ordinary mixed feeder.

The explanation of Dr. Hare's position, that it is the excess of carbohydrates rather than of proteids which is responsible for those faults of metabolism as to the existence of which all are agreed, would seem to indicate that some individuals tend to revert to the physiological type which prevailed in man's carnivorous period, and that these persons, therefore, display an inability to cope with carbohydrates which is as definite as the inability of others to cope with proteids. But even these cases can be reduced to the common denominator, which is represented by the necessity for a general reduction of intake. Though

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meats are undoubtedly stimulating and appetizing when consumed along with other kinds of food, a régime consisting solely of proteids very soon induces that form of disinclination and ready satiety which is expressively known as *toujours perdrix*.

There would seem, then, to be no escape from the position that such evils as are associated with our present system of dietetics are evils which arise, not from any faults in the quality of the foods ingested, but rather from the quantity of these foods which, in spite of his sedentary occupations, man still insists on consuming. It is a commonplace that we all eat too much, but a recitation of the belief seems very seldom to lead to an improvement in the practice, and such improvement is not likely to occur until we can succeed in bringing home to our patients the physiological inefficiency and its consequences which habitual excess necessarily entails. The causes of this excess are numerous. The most prominent is perhaps mere selfish indulgence in the pleasures of the table, accompanied, as it often is, by a grim determination to suffer the consequences of surfeit rather than forego the pleasures. Another cause is mere careless habit. When people are young and vigorous they can consume large quantities of food, not only with impunity, but even with seeming benefit, and the habit thus begotten is apt to be continued long after the age of impunity is passed. A third cause is the deficient mastication of foods. This is the keystone of the system which Mr. Van

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Someren has brought into prominence, and there remains no doubt in the minds of those who have tried this system, that adequate mastication, according to the standard laid down, leads to a decrease in the whole quantity of intake, which is very surprising.

The rationale of the system may be briefly stated as follows: We live by what we digest, and not by what we eat. That we eat more than we can digest is evidenced by the large amount of fæces which we daily evacuate, and whose regular discharge we have come to regard as so urgent a necessity. For fæces, we are reminded, are not the products of digestion; they are the materials which have escaped the digestive process, and represent, therefore, the excess of intake over the legitimate physiological needs. And we take this excess because we do not prepare our foods by adequate mastication and insalivation. If we did this, we should not feel the desire for the excess which many now feel. The desire is probably begotten by the demand from the economy for suitably prepared food. In response to this demand, a food is supplied which is not suitably prepared, and the needs of the economy are, therefore, imperfectly satisfied, so that the demand is continued until the stomach is physically incapable of holding more, and a mechanical satiety is induced. The ultimate disposal of this excess places a great strain upon the digestive and excretory organs, more especially the kidneys, so that suboxidation and deficient excretion, leading to dyspepsia, gout, and

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constipation, are the conditions which dominate our everyday lives.

Among the remaining causes of excessive eating, the practice of drinking fluids with the meals must be given an important place. This prevalent practice is quite unphysiological. If we seek a lesson from the lower animals in the matter, we find that none of the mammals are in the habit of drinking with their meals. The taking even of pure water with a meal enables the person to eat more than he otherwise would. There are some differences of opinion as to why this should be, but the fact itself is not in dispute. The probability is that the extraneous fluid supplies the moisture which ought in reality to be supplied by the saliva. The saliva not only digests certain foods, but it also lubricates the whole mass, and if this lubrication is artificially provided, the person tends to take an excess of solids. Fluid is, of course, very necessary to the economy, but it should not be taken at meals. The best time to take it is about half an hour before a meal, but if this is inconvenient, as it often is, the drink should be delayed until all the solids have been eaten. There is one great advantage in taking fluid before a meal, which is that it exercises a flushing effect on the stomach, and tends to free that organ from any remains of a previous repast which it may happen to contain.

And if the taking of fluids of all sorts can thus be held responsible for a larger consumption of food than

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is necessary, it is obvious that the ingestion of a local and general stimulant, such as alcohol, must be productive of the same effect in a very much higher degree.

It is impossible to enter here into the ethical side of the question of alcohol. The physiological side may be expressed by saying that whereas its occasional and infrequent consumption may justly be regarded as a legitimate indulgence, its habitual use, especially for those who have to work with brain or muscle, is undoubtedly fraught with evil; and further, that, if taken at all, it should be taken, not with the meal, but after all the solids have been consumed.

There is, however, one aspect of the matter which seems deserving of brief notice—namely, the form in which, when it is recommended, it is now the fashion to take alcohol. It has now been the custom for some years to recommend those who insist upon taking alcohol of some kind to take it in the form of spirits rather than in the form of wine or beer. This custom has very little to recommend it. In the first place, spirits are by far the cheapest, the easiest, and therefore the most insidious, form in which alcohol may be taken, and thus lead much more readily to habitual excess than either wines or beers. Moreover, of the diseases which are commonly attributed to alcohol, such as cirrhosis, hepatic and renal, and various diseases of the nervous system, the great majority appear in spirit-drinkers, and not in those who take merely wine or beer. Most spirits contain 50 to 60 per

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cent. of alcohol, and they all owe their stimulating properties almost exclusively to this element in their composition. Wines, on the other hand, contain on an average about 10 to 15 per cent. of alcohol, and owe their stimulating properties largely to the volatile ethers which give them their bouquet. The alcohol, as we know, leaves its mark upon the liver, kidneys, and nervous system—that is to say, it circulates a long time in the blood before it is excreted. The ethers, on the contrary, pass rapidly out of the system through the lungs, and a few hours after their ingestion they have quite disappeared. And yet we hear it said that whisky is 'wholesome.' What exactly is meant by the adjective in this connection it is difficult to say, but this, at any rate, is certain—that of all the methods of taking alcohol, spirits, whether in the form of whisky, brandy, gin, or liqueurs, are the most insidious and dangerous beverages to recommend to patients.

A practice which is commonly associated with that of whisky-drinking is the taking of aerated waters. This is another custom which, on physiological grounds, it is impossible to defend. Gaseous distension of the stomach leading to dilatation is a very common complaint. It may be too much to say that it is often induced by the consumption of aerated waters, but there can be no doubt that it is frequently gravely aggravated thereby. These waters are in public favour apparently because they, too, are considered 'wholesome.' No good purpose

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can possibly be served by introducing carbonic acid gas, normally a waste product of metabolism, into the system at all, and to introduce it into an organ which is all too frequently the subject of gaseous distension is a dietetic error too obvious to dwell upon. The drinking of fluids with meals, then, as tending to over-alimentation, should be discouraged. If alcohol is taken at all it should be in the form of well-matured wine, and its consumption should be reserved for the end of the meal. Aerated waters are powerless for good, and very potent for evil. Their habitual ingestion should, therefore, be forbidden.

Such are among the most important causes of overeating. The broad effects of this practice may now be briefly considered. Unnecessary food which is introduced into the system is not, as is commonly supposed, passed on and discharged as useless. All assimilable material is assimilated; it is only the unassimilable which is rejected. If too much assimilable material is taken, the organs concerned in the metabolic processes have too much work thrown upon them. If they are able to perform this work, the blood becomes surcharged with oxidizable matter, so that instead of being a nutrient, the plasma is in the nature of a depressant, producing the same results as an excess of fuel produces on a fire. Hence it is that overeaters are generally dyspeptics, and are usually either drowsy or irritable after a meal. The organism, however, makes an effort to cope with this excess, and calls for a plentiful supply of oxygen

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to carry on its work. This explains the dyspnœa, the breathlessness of slight effort, of which such people generally complain. The overloaded condition of the plasma constitutes an irritant either to the walls of the bloodvessels or to the vasomotor centres in the brain, thus producing constriction of the smaller arteries, and a consequent general rise of blood-pressure. The task of excreting the excess is undertaken mainly by the kidneys, which important organs have therefore cast upon them an amount of work which is out of all proportion to the physiological necessities of the case. If the metabolic processes do not succeed in adequately coping with the surplus food, the surplus is suboxidized, and causes the symptoms in various parts which are spoken of as gouty or rheumatic. The evils of excessive eating, therefore, may show themselves in any system or organ, but, except perhaps in the case of the stomach itself, the disturbance is due to the overloaded state of the liquor sanguinis, and it is consequently in the circulatory system, by the occurrence of dyspnœa and increased blood-pressure, that the earliest symptoms are most likely to show themselves (*vide* Goutiness, p. 188).

There are two ways of combating the evil effects of overeating in its early stages: the one is by the obvious course of reducing the amount of the intake; the other, by increasing the oxidizing processes. It is unnecessary to dwell upon the former further than to emphasize the fact that the older a person grows the less

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food does he require. The French say that man does not die—he kills himself; and the same idea is expressed in our own saying that man digs his grave with his teeth. Certain it is that when middle age is reached, it is only those who live a vigorous life in the open air who can indulge in the pleasures of the table with any degree of impunity. For the sedentary liver who would retain a full measure of physiological efficiency a considerable, if gradual, reduction of intake becomes essential at this age, and the reduction should proceed *pari passu* with advancing years, until at three score and ten it has reached a minimum.

The alternative of increasing the output by stimulating the oxygenating processes brings us to the question of **EXERCISE**. Here, again, having regard to the enormous personal differences which exist, it is quite impossible to lay down any hard-and-fast rule. This, however, may be said with confidence—that he who eats much, must exercise much, and the man for whom much exercise is impossible must meet the situation by consuming little. It is a common experience that brain work in the study is, with some people at any rate, an even greater provoker of appetite than muscular exertion in the fields. The explanation of this fact is too involved to enter upon here, but it may be asserted that the hunger begotten of study should not be appeased in the same manner as that which is begotten of muscular exertion. For the latter, a plentiful supply of nitrogenous foods, especially of meat foods, is sometimes considered

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appropriate. Although very decided doubts are now expressed upon this point, it seems generally to be agreed that such foods when taken in abundance by a sedentary worker lead inevitably to impaired health. The man, then, who has ample opportunity for efficient oxidation may be left to work out his own dietetic salvation; but he who is deprived of such opportunity should have it explained to him that, be his study-begotten appetite never so vocal, he must satisfy it otherwise than by meat foods and alcoholic drinks.

Of exercise in general, it may be said that the necessary amount depends upon individual requirements, a powerful factor in determining which is the amount of food consumed. It also depends to a great extent upon individual opportunity, and the amount to be recommended in each case can be arrived at only after due consideration of these points. The best kind of exercise is also a matter which must vary considerably in each case, though riding and golf are, as a rule, appropriate to both sexes and all ages. The objection, however, which is to be urged against these and most other exercises, with the exception of rowing, is that they contribute nothing to the development of the abdominal muscles. The importance of keeping these muscles in good condition must be evident to those who remember that, practically, they constitute the anterior abdominal wall, and that if they are allowed to become lax they fail to give adequate support to the internal organs.

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There was at one time a good deal of talk about the responsibility of the 'abdominal pool,' or 'splanchnic lake,' for deficient metabolism, and practitioners at health resorts, especially in Germany, are still in the habit of attributing a good many of the morbid conditions which they are called upon to treat to 'abdominal venosity.' These are, in reality, all synonyms for the same thing—namely, the state of matters which is brought about by lax and undeveloped abdominal muscles.

To keep these muscles firm and in good order, their regular use is essential, and, as the ordinary forms of exercise help but little in this direction, it is evident that we must resort to an exercise *ad hoc*. Various forms of such an exercise have been recommended, but the one which seems to be the best, in that it is not difficult, violent, or time-consuming, is the following: Wearing as little clothing as the circumstances permit, and with the windows wide open, the patient lies on his back on the floor, with his feet under the opened lowest drawer of a chest of drawers, or anything else which will keep his feet from rising from the ground. With his arms fully extended above his head and touching the floor in their whole length, he proceeds to pull himself into the sitting posture by means of his abdominal muscles, keeping the knees unbent. Care must be taken not to advance the arms beyond the line of the trunk, and to perform the movement deliberately. This will be found a very trying

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discipline to those who are unaccustomed to use their abdominal muscles; indeed, it is to many quite impossible, so that it is wise to begin with a modification, which consists in allowing the arms to be crossed on the chest while the rectus muscles pull the trunk forward.

This exercise should be done two or three times each morning to begin with; and when it can be done seven times without undue effort, the arms should be placed above the head as first described. With the arms thus placed, the number of times must again be reduced and then gradually increased as before. Another exercise which may immediately follow on the foregoing is performed as follows: The feet are released from the chest of drawers, and, still lying flat on his back, the patient raises the fully extended legs until they are at a right angle to his trunk. While this is going on, the hands are engaged in pinching up the skin and otherwise massaging the abdomen. These procedures may sound very formidable, but they are in reality not so. If they are done regularly, without hurry or strain, they take very little time and can do no harm, while their effect in keeping the figure from becoming aldermanic is very marked. This consideration appeals to most people—more especially to women—and if a greater number of the fair sex undertook these exercises there would be fewer cases of floating kidney and other abdominal and pelvic troubles than now unfortunately exist.

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Of other exercises which are adapted to ordinarily healthy people who have insufficient opportunities for spending much time in the open air, skipping holds a high place. Although usually regarded as suitable only to children, it is in reality a very excellent discipline for middle-aged and even elderly people, when undertaken with due regard to the necessities of each case. It exercises every part of the body, including the abdominal muscles, and subjects the internal organs to a species of massage which is very beneficial.[1] There are several systems of exercises, Swedish, Danish, and others, now in vogue, the majority of which, as entailing no violent exertion, and as tending to keep most of the muscles in good working order, may be confidently recommended to healthy persons. All these exercises should, if possible, be performed daily, as a matter of routine, in the morning before the bath, and preferably in a room the window of which is wide open.

The question of the temperature of the daily bath is one which is often referred to the medical man. I have already said that as a general rule it should be cold — that is, of a temperature between 40° and 60° F. This, however, refers only to healthy people under middle age, in whom a reactionary glow is easily obtained by the aid of a rough towel. To such people a cold bath is very invigorating; it

[1] The Girbola.

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promotes metabolism and effectually exercises the contractile power of the skin. If, however, it should not be followed by a reactionary glow, or if it should cause headache or loss of appetite, it should be discontinued. People who from any cause have a blood-pressure which is definitely above the normal, always complain of discomfort after a cold bath. The contraction of the peripheral arterioles increases the arterial tension, and if the baths are persisted in, accidents are very liable to happen. I have more than once been led to the discovery of an otherwise unsuspected vascular disorder by complaints of headache, giddiness, and the like, which have been positively referred to the cold morning tub.

Where for any sufficient reason it is decided that the daily bath should not be taken quite cold, it is necessary to decide at what temperature it should be taken. A tepid bath is one which, though definitely below the normal temperature, is, nevertheless, not so cold as to cause much contraction of the cutaneous vessels—that is, from 85° to 95° F. A warm bath is one which is about the same temperature as the surface of the body, and causes neither contraction nor dilatation of the cutaneous vessels—that is, from 90° to 98° F. A hot bath is one which is substantially higher than the normal body temperature, and tends to cause dilatation of the cutaneous vessels—that is, from 98° to 105° F. In connection with the hot bath, it is to be remembered that its effect varies not only with its temperature, but with its duration, and,

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further, that there are a great number of personal idiosyncrasies in the degrees of heat which can be tolerated. Women, as a rule, can take baths at much higher temperatures than men.

Very hot water causes an initial contraction of the cutaneous vessels, but if the bath be prolonged, this effect gives way to one of dilatation, and the ultimate result is one of general relaxation. If, therefore, the hot bath is substituted for the cold morning tub, it should be made clear that the exposure to the hot water, though it should not be so prolonged as to produce a general relaxation, should nevertheless be prolonged enough to enable the cutaneous vessels to recover from their initial contraction. If a daily hot bath of long duration is desired, it should be taken, not in the morning, but at night, when the day's work is over and relaxation is normal and physiological.

It is said by some physicians, chiefly on the Continent, that a daily bath is not only unnecessary, but actually injurious, on account of the fact that the natural oil of the skin is thereby removed. Such a view has nothing whatever to support it. The 'natural oil' of the skin is an excretion, and it should be removed at least once daily with the aid of soap and a due amount of friction. For those who are unable to take a cold morning tub, the warm bath of not more than 100° F. is the most generally suitable for these necessary daily ablutions. The duration of such a bath should not exceed five minutes.

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CHAPTER VIII.

SOME DRUGS, AND THEIR USES.

It is told of Sir Astley Cooper, who was not only a great surgeon but a wise man, that he was in the habit of warning his students against new remedies. 'If,' he said, 'you are too fond of new remedies, two consequences will follow. The first will be that you will not cure your patients; the second, that you will soon have no patients to cure.' Much the same idea is expressed in the phrase attributed to a distinguished physician of a later period, to the effect that 'the dangerous man is he who treats symptoms with new drugs.' There is, of course, nothing inherently wicked in the use of new drugs; it may, indeed, be affirmed that if no one ever tried them a correct estimate of their respective values would never be formed.

On the other hand, it seems to be a fact that an affection for new drugs has a tendency to lead to a neglect of those whose virtues are well established; and as a large proportion, a very large proportion, of new drugs are useless, the man who employs them helps his patients but little. Moreover, there are

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certain drugs which are so well established that they constitute the standards by which we measure their new competitors, and it is obvious that if we are not thoroughly at home with our standards, no useful comparison is possible.

It is said that the late Sir Henry Thompson, at one of his professional dinners, which were called octaves (eight o'clock, eight people, eight dishes, and eight wines), placed a card in front of each guest asking him, without consulting with anyone, to write thereon the names of the eight drugs he would select if he were in future to be rigidly confined to eight. History does not record the result of this election, but we are given to understand that there was a wonderful similarity in the voting-papers.

If the result had ever been published it would almost certainly have shown that old drugs, such as opium and mercury, headed the poll, and that new drugs were conspicuous by their absence. I should myself be very sorry to be confined to eight drugs—or to eighteen, for that matter—for the remainder of my career; but if such a calamity were to befall me, of those eight not more than one would be less than twenty-five years old. I propose now to refer to some points of practical interest in connection with such of the well-known drugs as I am best acquainted with. I do not, of course, pretend to exhaust the applicability of any of them—that is a text-book matter—much less to say anything which has not been said before.

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IODIDE OF POTASSIUM.—This is one of the most generally useful of all drugs, and the aphorism 'When in doubt try iodide of potassium' is a striking tribute to its many-sided therapeutic effects. To explain this many-sidedness is, however, no easy matter. We must, I suppose, grant it a specific effect upon gummata and some other syphilitic lesions; but no such explanation can be made to account for its activities in such widely differing conditions as emphysema, aneurism, asthma, goutiness, rheumatism, and several others of minor importance. In seeking for a factor in connection with the drug which would throw some light upon the property of ubiquity, which, above all others, it seems to possess, one is immediately struck by the fact that a large proportion of the morbid conditions in which it is successfully employed are associated with high blood-pressure. This is true of those already mentioned; it is also true of chronic renal disease, of pains, especially where these are nocturnal, and of arterio-sclerosis. For whatever else it is, iodide of potassium is undoubtedly a powerful reducer of blood-pressure, and it is to this fact that we may probably attribute, not only its merits, but also its drawbacks, as a therapeutic agent. I have certainly never given it in asthenic conditions unprotected by nux vomica, or some other drug which tends to raise blood-pressure, without causing unpleasant symptoms.

Iodide of potassium is, under certain circumstances, a great reliever of pain. Pains of all sorts, whether

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they be due to syphilis, goutiness, or what not, which are worse at night are almost invariably relieved and generally cured by the exhibition of this drug. It is, however, in aneurysm that its great value in giving relief from suffering is most manifest. The intolerable agony from which many of those suffer who are the subjects of this condition is more quickly and more lastingly relieved by this, than by any other form of medication. It is necessary to remember that in order to bring about this result the dose must be very large. It should begin at 20 grains three times daily, and may be increased cautiously to 30 grains. Sufferers from this disease generally show a remarkable tolerance for the drug.

In emphysema iodide of potassium is by far the most generally reliable agent. It cannot, of course, cure the condition; but it has a power in relieving the symptoms which is equalled by no other agent which I have employed. Emphysema is to the lungs what chronic interstitial nephritis is to the kidneys. The morbid process at work in the two cases is almost identical, and the effect upon the functions of the respective organs is practically the same. The iodide is much used, and rightly, in the treatment of renal cirrhosis, and it has always seemed strange to me that it should be so much neglected in emphysema. In out-patient practice I have had more expressions of gratitude from prescribing this drug in this condition than from anything else.

The number and severity of the attacks of

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spasmodic asthma are more readily reduced by iodide of potassium than by any other drug. Asthma is, of course, a symptom and not a disease, and it is a symptom of many conditions which may be related to gastric, cardiac, nervous, and other disturbances; but whatever the origin, the effect is usually the production of high arterial tension. This being lessened by the drug, the symptoms generally yield. Asthma is often spoken of as if it were a condition or tendency which was much influenced by climate. This it may be, but it is certainly much more powerfully influenced by diet, and if this factor be carefully regulated in the direction of reducing, not only the meat foods, but also the whole quantity of food, the necessity for drugs of all sorts may easily disappear. It has fallen to my lot on more than one occasion to cut short an asthmatic attack by the simple expedient of clearing the gastro-intestinal canal by means of an emetic and an enema. This treatment is not popular with patients, who prefer, as a rule, to be given soothing and habit-inducing sedatives and narcotics, a preference which ought never to be indulged, except, perhaps, in extreme cases, by a hypodermic injection of morphine.

Asthma of gastric origin is very often due to asthenic dyspepsia, in which case HCl and strychnine should be given between the attacks, the iodides being reserved for the treatment of the attacks themselves. A drug which is most valuable in conjunction with HCl and strychnine under these circumstances is

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arsenic. It seems to have a special effect in combating that form of gastric irritability which expresses itself in asthmatic ebullitions.

℞. Acid. hydrochlor. dil. ... ... ♏xx.
Liq. strychnin. ... ... ♏v.
Liq. arsenic. hydrochlor. ... ... ♏iv.
Aquam menth. pip. ... ... ad ℥ss.
M. Sig.: Ter die ex ℥i. aquæ post cib.

In this connection, it is perhaps permissible again to express a warning against giving liq. strychnin. with iodide of potassium. The tr. nucis vom. is nearly as useful, and there is then no danger of the alkaloid being precipitated. The combination of arsenic and iodide of potassium in asthma is an excellent one.

Iodide of potassium is often spoken of as a heart tonic. So it is, but indirectly only. In a previous chapter (Goutiness, p. 189) I have dwelt upon the mechanism of heart failure from high arterial tension, and have shown how it comes about that many hearts which are structurally sound dilate under these circumstances and give rise to murmurs. As the French express it, the fault is not with the central heart, but with the peripheral heart. The arteries, which in health are the heart's best friends, may easily in states of vaso-constriction become its most formidable enemies. It is under such circumstances that iodide of potassium acts the part of a cardiac tonic, not by exercising any stimulating effect

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upon the central organ, but by lowering the tension in the arteries, and thus reducing the amount of labour which the heart is called upon to perform. The drug confers physiological rest upon the overworked cardiac muscle, and is thus invaluable in threatened arterio-sclerosis and allied conditions.

Iodide of potassium is said to be as useful in affections of the aortic valve as digitalis is in affections of the mitral. It is difficult to see whence this saying arose, because the action of the iodide is on the heart as a whole, and not on any particular portion of it. The salt affects the heart beneficially, as we have already seen, by dilating the peripheral vessels, and so lessening its labours. Of these peripheral vessels, the coronary arteries are among the most important. If these were originally constricted, and if, in response to the iodide, they dilate, an increased amount of blood is permitted to reach the cardiac substance, so that the nutrition of the latter is improved. The dilatation has the further effect of inducing a flushing of the waste products, which are liable to accumulate in the muscle of fatigued hearts, and the action of the iodide itself in helping the solution and elimination of these products is most marked. It is also believed to lessen swelling and induration of the orifices and valves, an action which, having regard to its very marked absorbent powers, one can quite readily believe it to possess.

In the treatment of certain forms of cardiac complaint, where the heart is beginning to flag as the result

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of its efforts to overcome an increased peripheral resistance, the conjunction of the iodides with digitalis works admirably. The dose of digitalis should be small—certainly not more than 5 minims of the tincture to begin with, and preferably less. And it should be remembered, more especially in this connection, that in order to reduce blood-pressure, the dose of the salt should be what is usually considered large—namely, 10 grains or more. Small doses, such as 2 grains, tend rather to increase the intravascular tension than to lower it, and may therefore do an infinity of harm in most of the conditions which we have been considering.

Iodide of potassium is credited (Ringer) with the power of cutting short a common cold. It is both generally and locally a powerful absorbent, especially where glandular swellings are concerned, and it seems to have a particular power in promoting the absorption of simple swellings of the thyroid gland—simple in the sense of being neither cystic nor accompanied by other evidences of Graves' disease.

Iodide of potassium is the best remedy in petit-mal. On this form of epilepsy the bromides have practically no influence. Owing to the 'automatic acts' which are so liable to follow a fit of minor epilepsy—acts of pure animalism, uncontrolled by any higher centre—this type of the malady, though less arresting and alarming, is apt to be of much greater social importance than the ordinary type; for those who are not trained to observe generally overlook the small fit,

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and attribute the subsequent automatic act to pure wilfulness. As many of these acts constitute breaches of the criminal law, including even attempted murder, it is highly desirable that their cause, the petit-mal, should be recognised and treated. Very large doses of iodide of potassium will often lessen the number and improve the quality of these fits. There is, unfortunately, nothing which can be relied upon to bring about their cessation.

Luff[1] has a high opinion of iodide of potassium in the treatment of rheumatoid arthritis. He combines it in a cachet with carbonate of guaiacol, giving of each 10 grains three times daily, and insists that the treatment should be continued for at least twelve months. In addition, he lays great stress upon hygienic, dietetic and climatic details.

Such being some of its principal spheres of usefulness, what are the dangers and inconveniences of its employment? The only danger in connection with it—and it is a serious one—is presented by the fact that its administration has been known to cause œdema of the glottis. Elsner and Huchard have both recorded cases of this kind, so that it is well to warn a patient to whom we are giving it for the first time to stop the medicine and report himself if any throat discomforts arise. Of inconveniences there are many. Perhaps the most pronounced is the occurrence of diarrhœa, either alone or accompanied by vomiting. This is not altogether infrequent,

[1] *Practitioner*, July, 1905.

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because the drug certainly has an irritating effect upon the gastro-intestinal tract, and should therefore be given with caution where this system is deranged.

A form of iodism which has often given rise to unfortunate mistakes is that which causes pain and swelling in the parotid gland, accompanied by other symptoms strongly suggesting mumps. Ignorance of this fact may easily cause a deal of useless trouble and alarm in a household, and if the iodide is not stopped the condition will persist. The commonest forms in which intolerance shows itself are in the production of sore gums, sore throat, running at the eyes and nose, and metallic taste in the mouth. These vary much in degree, and may generally be checked by the addition of a few drops of Fowler's Solution to each dose. Next in order of frequency come the skin manifestations of iodism. These are numerous—they may, indeed, take almost any form—but it is well to remember the purpuric form, especially when we are giving the drug to a rheumatic subject; for if we forget it, it would be our duty to confine the patient to bed until some time after all signs of the rash had disappeared. True rheumatic purpura is just as liable to give rise to cardiac complications as acute rheumatism or chorea.

The best way of giving iodide of potassium is in cachet form, followed by a draught of water. If given in solution over long periods of time, it is well to add small doses of arsenic and nux vomica. The latter

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seems to prevent the occurrence of the mental and physical depression which some people experience when taking it for long. Sarsaparilla, liquorice and syr. pruni virg. are said to disguise its taste. According to some writers whose opinions are eminently deserving of attention, the iodide of sodium is more easily tolerated than the potassium salt. Professor Huchard, who has great faith in the iodides, insists very much upon this superiority of the sodium salt, which he seems to think is to be preferred on more grounds than one. That iodism in all forms is much less liable to occur with large doses—*e.g.*, 10 grains—than with the ordinary dose of 2 grains, is a matter of common observation. The late Sir George Macleod was in the habit of teaching that if symptoms of intolerance occurred the right course was to double the dose, whatever its original amount.

BROMIDE OF POTASSIUM.—My first object in referring to this valuable salt is to strike a note of warning concerning its use. It does not seem to be sufficiently known that it has a very deleterious effect upon old people. Even in the ordinary doses of 10 grains three times daily, in a person over sixty, KBr is very liable to give rise to mental confusion, and if persevered with it may cause permanent impairment of the intellectual powers. The drug produces its effects presumably by lessening the blood-supply to the brain—hence its value in epilepsy—but in elderly people the lessening of this supply may mean

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thrombosis of some of the vessels, and consequent softening. With a drug which presents such possibilities we cannot be too careful, and it is a good thing to make a rule not to prescribe bromides after the age of sixty unless their effects can be very carefully watched.

Another fact in connection with bromides which is worth remembering is that their effect in epilepsy is said to be very much enhanced, so that smaller doses produce the desired effect, when the diet is kept free from common salt. This plan, first advocated by Richet and Toulouse in 1899, has proved very successful in the hands of many who have tried it.

In nocturnal epilepsy the action of the bromides is said to be augmented by adding 5 to 10 drops of the tincture of digitalis to the evening dose. Bromides being very rapidly eliminated, it is unscientific to give one large dose in the twenty-four hours where the attacks are not confined to the night, and even when they are, it is better to keep the patient under the influence of the drug during the day.

The addition of 3 or 4 drops of Fowler's Solution and 2 of tincture of nux vomica will prevent any unpleasant consequences from taking the salt, even over long periods of time.

An enema containing 30 to 40 grains of bromide of potassium is very useful in the vomiting which occasionally follows the prolonged administration of an anæsthetic.

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DIGITALIS.—This is a drug which is probably used wrongly more often than it is employed rightly. It is used wrongly—that is, harmfully—whenever it is given as a matter of routine on the discovery of a valvular lesion. A well-compensated lesion, even at the mitral orifice, not only requires no digitalis: it resents it. It is used wrongly whenever it is exhibited without very special attention being paid to the state of the arterial tension; for digitalis is a powerful raiser of blood-pressure, and to increase the pressure when it is already unduly high is to court terrible disaster. Thus, it should not be given in any stage of arterio-sclerosis, in atheroma, in granular kidney, or in any condition, indeed, which is characterized by a slow pulse and full arteries. It is used wrongly when it is employed as a diuretic where œdema is absent, for its powers as a diuretic are confined to the cases in which this condition is present. It is used wrongly when, in the later stages of heart disease, œdema being present, it is persevered with after it has become evident that no good is to result from its use. Digitalis acts upon the myocardium and on the arteries, and when, as in such cases, the muscular tissue of the heart has become largely replaced by fibrous tissue, it is impossible for the drug to exercise any cardio-tonic effect, so that its sole action is that of constricting the peripheral arteries, and thereby adding to the burden of the already overtaxed central organ. It is used wrongly when it is given in aneurysm, for

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in this condition our object is to weaken the ventricular systole, not to strengthen it; to lower the blood-pressure, not to raise it. It is used wrongly when it is given in endocarditis or pericarditis, for in neither condition can it do any good, and, by raising the blood-pressure, it may easily do a great deal of harm. It is used wrongly when it is employed for the relief of palpitation, unless it is quite certain that this symptom arises from feebleness of the heart itself, and is not caused by obstruction in the systemic periphery. The palpitations of dyspepsia, of chlorosis, of nervous affections, and of the abuse of tobacco, are all aggravated by the exhibition of the drug. It is used wrongly when by its means an attempt is made to overcome the tachycardia of Graves' disease.

The commonest error in connection with the employment of digitalis is its exhibition as a routine procedure whenever the existence of a morbus cordis can be established. A valvular lesion, it must be remembered, is a mechanical break-down which no line of treatment can hope to cure. Nature herself goes as near as is possible to overcoming the difficulty, and if by giving digitalis we interfere with her methods, we upset the balance which she has established, and by our ignorance and officiousness we provoke the very state of broken compensation which we are above all things most desirous of avoiding. The French teachers are never tired of repeating that 'une lésion d'orifice n'est pas une maladie du cœur,' and of insisting that it is not

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until the heart shows unmistakable signs of breaking down—until, that is, the myocardium fails to contract properly—that cardiac therapeutics come into play. Until that occurs the giving of digitalis is mere meddling, and meddling of a peculiarly pernicious kind.

It is said that digitalis should never be given in aortic regurgitation, because, by prolonging the diastole, it encourages a larger reflux into the ventricle. This view, though perfectly sound theoretically, requires some modification, not only in view of different effects of the drug according to the dose employed—a question which is considered later—but also because its employment is justifiable and necessary in aortic regurgitation *of rheumatic origin*, when disaster threatens from progressing weakness of the myocardium. In aortic regurgitation caused by aortitis and other conditions associated with high arterial tension, it is, on account of its constricting effects on the peripheral vessels, never justifiable to administer the drug.[1]

Digitalis, like mercury, is well tolerated by children. It is exceptionally well borne by alcoholics, and in febrile conditions it may be given more boldly than under ordinary circumstances. In disordered states of the stomach it should be given with caution, because it has itself a tendency to irritate the gastric mucosa. A great deal has been written about the toxic effects of the drug, and while there is no doubt

[1] *Vide* 'Aortic Insufficiency,' *British Medical Journal*, August 4, 1906, p. 277.

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as to its tendency to cumulative action, the dangers thereof are usually much exaggerated. These dangers may be avoided without any risk of lessening the beneficial action of the remedy by suspending it every sixth day for a day or two, for the action will continue during the interval. The appearance of toxic effects is usually, but not always, heralded by a condition of the pulse which, though by no means peculiar to intoxication by digitalis, is nevertheless very suggestive of it. This pulse has been described as one of 'rhythmic arhythmia,' or 'regular irregularity.' Other names have been applied to it, such as the 'coupled pulse,' and the 'pulsus bigeminus,' intended to indicate that it is regular for two (or perhaps three) beats together, a disturbance of the regularity then occurring, which immediately ceases, to return again at regular intervals. It might be expressed thus – – – – – – – – The supervention of a pulse of this nature while a patient is taking digitalis should lead at once to the cessation of the medicine, and its existence from any cause should suggest the utmost caution in prescribing the drug.

The exhibition of digitalis should always be preceded by a brisk purge; some writers even go so far as to say that the ground should be prepared for it by venesection. This is not necessary in the vast majority of cases, but the purgative, preferably in the form of a blue pill (5 grains), followed by a saline, should never be omitted, and it may be repeated from time to time with great advantage.

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This refers to cases of ordinary severity. In the presence of symptoms of more than ordinary gravity, with much œdema, great arhythmia, and urgent nocturnal dyspnœa, where the liver is greatly enlarged and the urine very scanty, it is necessary to be much more drastic. In such cases it is quite useless to give digitalis until the portal radicles have been freely unloaded for several days in succession, and this must be brought about by what, under ordinary conditions, would be regarded as purgation of quite brutal severity. Some writers speak of 10 grains of calomel every night, others of 2 drachms of pulv. jalap. co. three times daily, whilst a third set praise a saturated solution of magnes. sulphat. in ½-ounce doses hourly. I mention these merely for the purpose of insisting upon the fact that purgation must be very severe, and the more urgent the symptoms, the more drastic should it be. A point of great practical importance is that such cases, even when apparently at their last gasp, bear evacuants surprisingly well, so that one need never hesitate to push the remedy to the point of heroism. Where digitalis fails to act, or where it produces vomiting in the first few doses, it is generally a clear indication that the way has not been sufficiently prepared for it, and the purgation must be continued. During such continuance it is well to prescribe a hypodermic injection of morphine, ⅛ grain (not more) every night, and to exhibit liq. strychnin. (5 minims) and theobromine (15 grains), three times during the day.

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Another fact which should not be forgotten in connection with digitalis is that the full benefit of the drug is to be obtained only when the patient is in bed. In slight cases it may, and often does, act when he is moving about, but smaller doses will bring about better results, and in a shorter time, if the recumbent posture is insisted upon. Another important point to be remembered is that its action, whether it be used as a cardiac tonic or as a diuretic, is very much enhanced by a pure milk diet. Stimulating foods interfere with its action. If it is desired to use stimulants, which it often is, carbonate of ammonia is the best. Alcohol may be necessary, but it is usually better avoided.

M. Huchard, who amongst French writers is the chief exponent of the virtues of digitalis, says, at the close of an eloquent passage[1]: 'Le seul médicament cardiaque est la digitale.' Few English physicians would be disposed to agree with this, for in this country we place great reliance both upon caffeine and strychnia, but everyone will admit that in its own particular sphere digitalis stands alone and unrivalled. Now, what is this sphere? Well, it is sufficiently circumscribed, as may, indeed, be judged by the length of the *index expurgatorius* which has already been recited. The matter may be summed up by saying that digitalis is called for when, from whatever cause arising and whether or not a valvular lesion of any sort be present, there is weakness of the

[1] 'Nouvelles Consultations Médicales,' p. 434.

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contractile power of the heart, provided that this weakness is accompanied—(1) by arhythmia, (2) by a lowering of arterial and a heightening of venous tension. And, because of its diuretic effect, the drug is all the more urgently demanded when these conditions are attended by œdema, ascites, visceral congestion, and diminution of the urinary flow. This state constitutes the kingdom over which digitalis holds sovereign sway, but even here its power is limited; for, as I have already pointed out, when the cardiac muscular substance becomes replaced by fibrous tissue, as it ultimately does in all cases of long standing, the drug ceases to do good and may easily be mischievous. It is, nevertheless, safe to say that he who confines its employment, in the ordinary doses, to cases of the kind above indicated, will seldom do harm, and the good he will do will add greatly to his credit and satisfaction.

One of the chief difficulties in connection with the exhibition of digitalis is the unreliability of the ordinary preparations. The amount of active principle present in any given sample of leaves seems to vary more in the case of this drug than in any other, with season, soil, and other factors not easy to ascertain. Hence it is that of two samples of, say, the tincture, obtained from different druggists, one may be active and satisfactory and the other inert except for the production of vomiting and other unpleasant effects. This is no uncommon experience, so that before deciding that the drug cannot be

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tolerated it is wise either to change the form in which it is being used, or try the effect of sending the prescription to another chemist. It is often said that the infusion is more trustworthy than the tincture. This I believe to be true, but only when the infusion is freshly made. In France it is very generally held that a freshly-made *cold* infusion is one of the best means of giving the drug. About 3 grains of the powdered leaves are macerated in about 10 ounces of distilled water for twelve hours. The liquid is then filtered to prevent any solid particles obtaining access to the stomach; the amount is divided into 4 or 5 doses, which are taken at intervals during the following twenty-four hours. The very unpleasant taste of this infusion may be mitigated by allowing a few slices of lemon to macerate along with the digitalis, or by adding the juice of half a lemon to each dose. If for any reason the tincture should prove unsatisfactory, an infusion thus made may be appealed to with confidence.

The solid preparations of digitalis are seldom well tolerated under precisely those conditions when the drug is most urgently required, and I have long since ceased to employ them. The form in which the drug has, in my hands, proved most trustworthy is the preparation of the French Codex called 'soluté officinel de digitaline cristallisée,' of which the dose is 5 to 15 minims. It is quite easily obtained in this country, and is infinitely more reliable than any of the ordinary preparations. It was originally

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suggested by Potain, and its value has been acclaimed by nearly all the French writers since his time. Professor Huchard, who never uses any other preparation, declares that so certain is it in its action, that want of success with it necessarily means want of skill on the part of the prescriber.

The granules or pills of crystallized digitaline (Nativelle) are useful when the solution cannot be obtained, but in common with all the solid preparations, they have a greater tendency to upset the stomach than the above-mentioned solution.

Digitaline should not be administered hypodermically if it can be given with any prospect of success by other means, because even the best preparations are very liable to cause pain at the site of injection, which lasts for several days.

In ordinary doses (10 to 30 minims of the B.P. tincture) digitalis produces the general effects which we have just been considering. It quiets the heart's action, strengthens the systole, and prolongs the diastole. If it regularizes the pulse and slows the beats, it is doing good; if it does not produce these effects, it is either useless or harmful.

My own custom, however, except where symptoms of urgency are present, is to begin with much smaller doses than are usually prescribed. If I see a case where compensation is only just beginning to fail, in which the arhythmia is slight and there are no urgent signs, I prefer to give a dose of 2 minims, combined as follows:

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℞. Tr. digitalis vel Sol. digitaline cristal.
(Codex) ... ... ♏ii.
Caffeinæ citrat. ... ... gr. ii.
Tr. nucis vom. ... ... ♏ii.
Aquam ... ... ad ℥ss.
M. Sig.: Every four hours for a week, then twice daily.

For reasons which appear later, I am in the habit of ordering with this mixture 1 grain of blue pill to be taken four nights a week. This practice I have found admirable in preventing failure of compensation by affording a slight but sustained tonic re-enforcing action. If persevered with (allowing, of course, occasional holidays) it postpones for months, and even years, the dreaded days of asystole and intercurrent disease. If a patient is not ill enough to remain in bed at all costs, then he is not ill enough to be given—at first, at any rate—larger doses of tincture of digitalis than 2 to 5 minims: a dose which a considerable experience of out-patients has shown me not only to be highly efficacious, but, even when taken over long periods of time, to be entirely free from danger.

MERCURY.—Mercury has been called the sovereign remedy for all evils, and if we include its salts, it surely goes very near to justifying the title. The metal itself is the remedy *par excellence* in syphilis, in the earlier stages of which it has what we must assume to be a specific effect. It is also well to remember that in the so-called tertiary manifestations affecting the nervous system mercury will often prove

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successful when iodide of potassium proves fruitless. Of the methods of exhibiting the drug in syphilis nothing can compare with the inunction method as practised at Aix-la-Chapelle. A full account of this method and its accessories was given in a paper read by Dr. Lieven of Aix-la-Chapelle before the East Anglian Branch of the British Medical Association in April, 1904, and was published in the *Journal of Balneology and Climatology* in July of that year. Space does not permit me to enter into any detail concerning the method, but I should like to point out that it is one which any careful practitioner can carry out, without sending the patient either to Aachen or to any of the numerous health resorts in this country where it can be obtained. It is so superior to any other means of introducing mercury into the system, so full of advantages, and so free from risks, that I do not hesitate to say that he who neglects it is not doing his best for his patient.

The expression 'alterative' which was applied to mercury by our forefathers must still be employed to denote a quality in the drug which we all recognise, but which in the present state of our knowledge we are unable to explain. We know that it is a germicide, that it is a cholagogue, that it is an absorbent; but we know, too, that it is something else which we cannot place in any category. It is to that something else that we appeal when we prescribe small doses of gray powder for a bottle-fed baby who, though being fed on lines which are quite satisfactory,

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is nevertheless not thriving. We may feel certain that there is no syphilitic taint, and yet we place absolute reliance upon the drug to bring about an alteration for the better in the child's nutritive process. It is to that same something which we appeal when we prescribe mercury for a patient who, though not ill, yet exhibits undoubted signs of a resisting power which is below the normal level. And the curious thing is that the appeal is so seldom made in vain. They are fond in France of using the terms 'parasyphilitic' and 'paratuberculous' to describe conditions which are admittedly neither syphilitic nor tuberculous, but which are supposed to bear some relationship to these infections, and in both the favourite remedy would appear to be mercury. It would seem as if the vital soil of some individuals occasionally required digging over, as it were, with fresh material, in order to bring their powers of resistance up to the normal level, and there can be no doubt that that fresh material is more abundantly supplied by mercury than by anything else.

In connection with digitalis, I referred to the importance of preparing the way for this drug by a dose of mercury, followed by a saline. That is classical; it may even be described as canonical, inasmuch as it is everywhere recognised that digitalis is ineffectual until the portal radicles have been unloaded. But there is an action of mercury in connection with heart disease and digitalis which cannot be explained by the mere unloading of the portal radicles. Dr. Murray of

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Newcastle[1] has strongly advocated the practice of giving small doses of mercury for long periods of time to those afflicted with cardiac disease, and he relates a remarkable case in which the metal appeared to act not on the peripheral system only, but upon the heart itself. Whatever be the proper explanation of its action, I can confirm his observation that mercury in heart disease has a value, not only when given occasionally as an evacuant, but also when exhibited in small doses daily over long periods of time; that even apart from digitalis it maintains the functional power of the heart; and that, curiously enough, when thus given it seems to have little tendency to produce any symptoms of intolerance. So impressed have I been with its value in this direction that I now seldom prescribe a direct cardiac tonic without at the same time ordering one grain of blue pill to be taken at least three nights a week.

Of the salts of mercury, that which is probably the most highly esteemed is calomel. In large doses—*i.e.*, from 5 grains upwards—it is a very drastic cathartic; in moderate doses—*i.e.*, from ½ grain to 2 grains—it is a cholagogue; and in small doses—*i.e.*, from $\frac{1}{6}$ to ½ grain—it is an intestinal antiseptic. In small doses it acts as a cathartic if it is given three times daily, and continued for four or five days. This method has many advantages over that of the single large dose, inasmuch as it allows the drug time to exercise its sedative influence—an influence which,

[1] 'Rough Notes on Remedies.'

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though very marked, is seldom spoken of. In some cases the single large dose is essential—in delirium tremens, for example. The late Sir George Macleod used to declare that a full dose of calomel was infinitely the best treatment in this condition, and he seldom employed any other. Dr. Murray advocates the use of what most people would regard as enormous doses in acute mania, and he tells of some cases in which he has given as much as 30 grains of calomel to a maniacal patient with the happiest results. One case, 'after much profuse vomiting and purging, became as quiet as a child, and fell into a sound sleep, to awake in a perfectly calm frame of mind.' There is much shrewd practical common-sense in this method, and it might be remembered with great advantage in emergencies similar to those which the author relates.

In minute doses calomel is of the greatest value in typhoid fever. It promotes intestinal antisepsis, prevents borborygmi, and renders the stools less offensive. I know of nothing to compare with it in the medicinal treatment of this condition (except, perhaps, Dr. Burney Yeo's chlorine mixture),[1] over which it has the great advantage of simplicity and tastelessness. Care should be taken in giving it, however, lest it should accumulate (as it sometimes does), and then exercise the effect of a single large dose. One-eighth grain three times daily is a sufficient dose, and

[1] 'Manual of Medical Treatment,' second edition, vol. ii., p. 686.

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this should not be continued for more than three days without an interval. It is usefully combined with 3 grains of thymol made into a pill with soap powder and a little spirit. If the bowels are thoroughly cleared at the outset by a dose of 2 grains of calomel, and if this pill is given cautiously during the first fortnight, the fever will generally take a benign course.

Another deservedly popular preparation of mercury is hydrargyrum cum cretâ. It is, as has already been mentioned, probably the best alterative for children, especially when combined with rhubarb and soda, as in the following:

℞. Hydrarg. c. cret. ... ... gr. i.
Pulv. rhei. ... ... gr. i.
Sodii bicarb. ... ... gr. iii.
M. Ft. pulv. Sig.: Nocte maneque.

Dr. Murray speaks highly of the following powder in the treatment of catarrhal jaundice:

℞. Hydrarg. c. cret. ... ... gr. i.
Pulv. cret. ... ... gr. i. vel grs. ii.
M. Ft. pil. Sig.: Ter die sumend.

'In no disease,' he says, 'are there more fanciful and absurd cures in vogue, but they are mostly useless and injurious. The one remedy I have faith in is the administration of gray powder until the gums are touched, and kept so for a month.' In order to avoid the difficulty of purgation arising from the use of the ordinary powder, Dr. Murray proposes

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the addition of the extra grain or two of chalk which he has found of signal benefit. In biliary colic Dr. Carter speaks highly of the value of succinate of iron (5 to 10 grains), which he and some of his friends have found more efficacious than any other remedy, both for the relief of the attacks and the prevention of their recurrence.

Mercury and its salts would appear to be the sheet-anchor of dermatological therapeutics. Calomel is, according to Ringer, infinitely the best remedy in that very troublesome condition, pruritus ani. He prescribes an ointment—calomel 1 drachm to 1 ounce of lard—which he says seldom fails to relieve, and has never in his experience caused symptoms of absorption. (The sedative effect of calomel, to which I have just referred, is well exemplified by these facts.) This ointment is less efficacious in pruritus pudendi, but here the white precipitate combined as below will be found very useful. (See also Calcium Chloride, p. 317.)

It is well to remember, however, that in pruritus pudendi, borax is even more reliable than any salt of mercury. It may be ordered as unguentum boracis (1 to 8), or in the following lotion :

℞. Sodii biborat. ... ... ʒi.
Ol. menth. pip. ... ... ♏v.
Aquam ... ... Oi.

In all forms of pruritus, ointments are liable to be less efficacious than either powders or lotions.

Mercurial salts are used in a great number of skin

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affections. In eczema, especially of the head, a favourite combination is:

℞. Hydrarg. ammon. ... ... grs. x.
Liq. carbonis deterg. ... ... ℥xx.
Vaselin vel lanolin ... ... ad ℥i.
M.

The yellow oxide is especially valuable in the treatment of pustular eruptions, and if applied early will often succeed in aborting a boil. Inasmuch as the tendency to falling hair, more especially in women, is stayed by their use, mercurial salts would seem to exercise an influence on the nutrition of the hair follicles. A combination which frequently acts remarkably well in this condition is as follows:

℞. Hydrarg. perchlor. ... ... grs. xii.
Glycerin ... ... ℥iii.
Spts. rectif. ... ... ℥iii.
Olei rosæ ... ... ℥ii.
Aquam ... ... ad ℥vi.
M. Sig.: To be well rubbed into the roots of the hair night and morning.

When giving such a prescription it is always well to warn the patient that the treatment may seem at first to increase the trouble, the reason being that the moribund hairs are removed by the rubbing.

In connection with falling hair, two diseases of which it may appear as an early symptom should suggest themselves, so that other symptoms may not pass unobserved: one is myxœdema and the other exophthalmic goitre. Even apart from myxœdema, the internal administration of thyroid extract will often be

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found to stop the undue shedding of hair; but if exophthalmic goitre is present this drug should not be given. Attention has been called to the fact that premature grayness or suddenly falling hair is often suggestive of the rapid development of tubercle, malignant disease, and arterial degeneration. The information as to general diseases which is to be obtained from careful observation of the skin and its appendages should never be despised.

I have already referred (p. 23) to the value of the biniodide of mercury in the treatment of throats which are suspected of being diphtheritic, and I now revert to it merely for the purpose of reiterating and emphasizing my confidence in the course there suggested.

'Before leaving the subject of mercury,' says Dr. Murray, 'let me give one practical hint. If in doubt as to the amount of calomel or gray powder we shall give to a child, lay bare the nates, and if you find them thin, flat, and flaccid, give but a small dose. If, on the other hand, its little gluteal regions come together like the chubby cheeks of a cherub, you need have no fear of a free dose.'[1]

ARSENIC.—Arsenic was at one time regarded as almost a specific in most chronic cutaneous disorders, but experience has since shown that it is liable to be a double-edged weapon, which should be employed with great caution, inasmuch as it has an undoubted tendency to convert a chronic disorder into an acute

[1] *Journal of Balneology*, October, 1905.

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inflammatory condition. In suitable doses it is a very useful general tonic, and in very small doses (1 to 2 minims of Fowler's Solution) it is an excellent tonic to the digestive organs, more especially the stomach. It is very efficacious in vomiting, especially the morning vomiting of drunkards and those suffering from other forms of chronic irritation. It is probably the most reliable remedy for lienteric diarrhœa in children.

As a general tonic it has a special value in functional affections of the nervous system, especially when combined with nux vomica. I have found small doses of both to be more efficacious and better tolerated than large ones, a good combination being a pill containing $\frac{1}{20}$ grain of arsenious acid and $\frac{1}{10}$ grain of extract of nux vomica, three times daily after food. This pill should not be given in organic disease of the nervous system, because even the small quantity of nux vomica it contains is calculated to do harm.

As a digestive tonic, arsenic acts admirably when combined with citrate of iron and ammonia in those anæmic and chlorotic patients (and they are very numerous) who cannot take the stronger preparations of iron, such as the sulphate and the perchloride. A mistake which is very often made is to give chlorotics and anæmics these stronger preparations in the first instance, a very common and a very futile combination being magnesium sulphate and iron sulphate. It has several times fallen to my lot to see a patient who had failed to make any progress whatever with

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a prolonged trial of this, improve by leaps and bounds as soon as the following was substituted:

℞. Ferri ammon. cit. ... ... grs. x.
Liq. bismuth. ammon. cit. ... ... ʒii.
Liq. Fowleri ... ... ♏v.
Aquam ... ... ad ʒss.
M. Sig.: Ter in die post cib.

I do not at all underrate the value of purgatives in the treatment of this condition, but there is no special reason for including them in the mixture. They may be given independently in the form of a morning draught, or some other laxative, such as aloes or cascara, may be employed. Aloes is said to enhance the action of iron, and there certainly seems to be good ground for this opinion.

As the result of Dr. Murray's[1] enthusiastic advocacy, arsenic has of late been very much employed in two conditions on which it was formerly not supposed to have any influence—namely, diabetes and chorea. My own opportunities for trying it in diabetes have not been numerous, but where I have, it has certainly seemed to be a valuable aid in still further reducing the amount of sugar after this had been brought to an apparent minimum by diet and opium or codeia. The drug is certainly very well tolerated by diabetics, a fact which in a general way may be regarded as an indication for its use. It should not, according to Dr. Murray, be given until the sugar has been so much

[1] 'Rough Notes on Remedies.'

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decreased by diet and codeia as seems possible. Arsenic will then not only still further reduce the amount, but it may be trusted in suitable cases to cause its entire disappearance, and to prevent its recurrence, even with an ordinary diet.

The treatment of chorea by large doses of arsenic was invented by an unqualified practitioner, who, on his death-bed, disclosed the secret of his success to Dr. Murray. The secret was this: 'that Fowler's Solution, in 15 to 20 drop doses, might generally be given to children from ten years old upwards for a few days without disturbing the stomach, and that so given it was an almost infallible cure for chorea within a week.' Dr. Murray's own observations confirmed the value of the drug so given, but he insists that two rules should be observed. The one is that the minimum dose should be 15 drops of Fowler's Solution; and the other, that the treatment should not be continued for more than one week.

A trial extending over several years enables me to speak with some assurance as to the efficacy of this method. It does good in the large majority of the cases; in some instances it is brilliantly successful, and in a few it fails completely. But I do not agree that it is essential that the treatment should be stopped on the eighth day. I have, indeed, found that to do this, is often to lay down the weapon just as it commences to be operative; that it is, in fact, during the second week of large doses that the symptoms yield. It is, of course, necessary to call the parents' attention to

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signs of intolerance during this second week. I have found, further, that absolute rest in bed, combined with a diet from which fish, flesh, and fowl are rigidly excluded, greatly increases the prospect of cure by this, or, indeed, by any other method. Finally, I have found that the addition to the mixture of large doses (say 20 minims to 1 drachm or more) of liquid extract of ergot, as suggested by Dr. Eustace Smith,[1] notably increases the percentage of cures.[2]

There are, however, some cases which obtain no benefit whatever from arsenic thus given, and although I have endeavoured to classify them, I am unable to suggest any point which, in examining a case, would enable us to suspect beforehand that it was one which would prove intractable to arsenic. One very practical clinical point, however, is that the cases which fail to respond to arsenic will nearly always (invariably, in my experience) react to trional. Trional will fail in a very large number of cases where, under circumstances which are identical as regards rest and diet, arsenic will succeed; but I have not yet come across a case where, arsenic having been found wanting, trional has failed to produce the most satisfactory results.

In dealing with chorea, my custom, therefore, is first of all to insist upon the recumbent posture and upon a purin-free diet. I then give a mild cathartic and

[1] *British Medical Journal*, July 18, 1903.

[2] *Vide* 'Ergot and Arsenic in Chorea,' by Clive Rivière, *British Medical Journal*, February 25, 1905.

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immediately begin the arsenic treatment. At the end of a week I am guided by circumstances as to whether the arsenic is to be continued for another week, or trional (10 to 15 grains), three or four times a day, substituted. Very few disappointments will, I believe, await anyone who follows the same line. Arsenic is the most reliable remedy in habit-spasm.

Mr. Jonathan Hutchison[1] regards arsenic as a specific in herpes of the lips and genitals—when recurrent. Herpes zoster is often provoked by arsenic, but as in zoster recurrence is very unusual, the drug does not act. It is the element of recurrence which constitutes the indication for its use.

In conformity, it is to be presumed, with its supposed beneficial effect in all affections of the skin, arsenic is sometimes given by the mouth for the cure of chilblains. There is no objection to this, but I cannot say that I have ever seen much benefit from its use. This troublesome affection is generally best treated by calcium chloride internally (*q.v.*), combined with local measures. The limb should have an extra wrap worn upon it, so as to encourage the circulation of blood in the part. The patient should be warned against subjecting those parts which show a tendency to this form of stasis to sudden alternations of heat and cold, because, for some unknown reason, these alternations seem to be much more active in producing chilblains than cold alone. Tight boots and tight gloves must be forbidden. As a local application,

[1] *British Medical Journal*, July 30, 1887.

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nothing can compare with the unguentum iodi (B.P.), especially when vigorous rubbing is employed. It stops the intolerable itching and causes the subsidence of the inflammatory process. For broken chilblains, touching with sulphate of copper and dressing with unguentum resinæ will rapidly effect a cure. For checking the tendency to chilblains—to forestall them, that is—iron, arsenic, and cod-liver oil are all useful, but calcium chloride is invaluable. Exposure of the parts to radiant heat, as by Dowsing's lamps, will not only assist in checking the tendency: it will also bring about absorption of the unsightly swellings which chilblains so frequently occasion. Von Buiz (*Therap. der Gegenwart*, January, 1906) gives the following as an infallible remedy for chilblains:

℞. Calcinat chlorinat (B.P.) ... ... ʒi.
Paraffin ... ... ʒix.
M. Ft. ungt. Sig.: To be well rubbed in at night.

BELLADONNA.—Belladonna has been called the children's drug, because it is credited with much the same properties in early life as opium is known to possess in later years. There is some truth in this, especially so far as the relief of abdominal pain is concerned; for it is here that belladonna is of the greatest service in connection with the young. Nocturnal enuresis is, as is well known, another affection of early life in which it may be appealed to with very considerable confidence. In adults it has

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been extolled in a great variety of conditions, in some of which I have found it helpful, while in others it has in my hands proved useless. In a previous chapter (Constipation) reference has been made to its value when given alone as a laxative, especially in old people. It is very useful as an adjunct to other laxatives, and is a favourite ingredient of most dinner pills. In dysmenorrhœa—a term which, for our present purpose, may be made to include the various pelvic pains which afflict some women at or about the menstrual period—it is often magical in its effects, especially when combined with aloes. A pill which has many a time done good service in this direction is composed of—

℞.	Ext. belladon.	gr. ¼.
	Ext. aloes aq.	gr. ½.
	Ext. cannabis ind.	gr. ¼.
	Ol. cajuput.	♏i.

M. Fiat pil.

It is taken three times a day for three days before the period is expected, and may be continued during the period. It is of special value in those numerous cases in which the development of flatulence is associated with the pain.

Belladonna is the most useful drug in many, perhaps the majority, of the cases of exophthalmic goitre. How it acts, I am unable to say; nor have I ever been able to light upon any symptom—except, perhaps, the sweating—which provides an indication

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for its exhibition. For though it succeeds admirably in a large number of cases, it fails conspicuously in others. Inasmuch as the drug tends to raise blood-pressure, and that blood-pressure in Graves' disease is generally too high, it is difficult to find an explanation of its undoubted beneficial results, unless it be that the drug checks the abnormal secretion which the thyroid is believed to pour into the circulation. To obtain these results the belladonna must be given over long periods of time. Some people, Ringer among them, speak of the efficacy of large doses—*i.e.* 5 minims of the tincture hourly for four or five days, then less frequently. I have no experience of this method, but it is said to be popular with homœopathists. I have found it more convenient to give the drug in pill form combined with arsenic (acidum arseniosum, $\frac{1}{20}$ grain; extractum belladonnæ, $\frac{1}{4}$ grain) three times daily, with intervals, during which iodide of potassium and, if the state of the heart demands it, digitalis in small doses should be given.

Apart from these drugs, however, the best way of dealing with Graves' disease is to send the patient to a mild, relaxing, equable climate, away, if possible, from fussy friends and relatives, and to reduce the purin foods to a minimum. It is said that most of these cases ultimately progress to myxœdema. This may be so, though the fact has not come under my observation. I am, however, convinced that a very large number progress to various degrees of mental instability, and even to serious alienation.

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Belladonna has been highly extolled by Dr. Murray in the treatment of renal colic. The doses used must be large—that is, 20 to 30 drops of the tincture hourly for four or five hours. The treatment should be employed only in those cases where there is good reason to believe that the calculus is already in the renal pelvis or in the ureter, where it would cause recurrent attacks of true colic, and the doses above mentioned should be confined to the period of the attack. It is well to remember that a calculus in the ureter will often give rise to symptoms in women which it is very difficult to distinguish from those of ovarian irritation and its accompaniment of functional neurotic ebullitions.

Belladonna checks the secretions, except those of the bowel, which it promotes. It is invaluable in checking the secretion of milk, for which purpose it is better applied to the breast by gentle rubbing and kneading than by a plaster. A preparation which is convenient is made by mixing an equal quantity of the extract and glycerin. The liniment is useful, but it is liable to irritate. In bad cases the additional application of an ice-bag to the parts is very advantageous. The liniment is by far the most useful application for that common and otherwise intractable condition hyperidrosis of the feet.

The late Sir Russell Reynolds once said in my hearing that the only thing that he was able positively to affirm in connection with belladonna was that it was aphrodisiac. The experience of many of

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those who have had the after-care of patients who have been treated for inebriety by atropine and strychnine tends very strongly to support this view. In their opinion this method of treating alcoholism results in the substitution of one craving for another.

That there is some connection between the relief of slight enuresis and the production of aphrodisiac effects is borne out by the fact that cantharides, a well-known aphrodisiac, is a most valuable remedy in the functional urinary incontinence of the aged. The dose for this purpose should, however, be very small. Drop doses of the tincture, three times daily, generally suffice to relieve the symptom in a few days.

ICHTHYOL.—This is a comparatively new drug, which has justified its existence by acting almost as a specific in at least one condition which up to the time of its introduction had seemed singularly intractable. At or about the menopause a great many women—the majority, perhaps—suffer from a number of curious symptoms dependent upon instability, primarily of the nervous system, which is usually reflected in the vascular system. Thus headache, giddiness, flushing, sudden profuse perspirations, irritability of temper, and melancholia are exceedingly common. It is over these and similar symptoms that ichthyol exercises a sedative and regulating influence, which in some cases is little short of marvellous. The best way of giving it is in 5-grain pills three or four times a day.

As an external application an ointment of 25 per cent. made with lanoline is very useful in relieving the pain

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of boils and similar painful eruptions. It does not seem to exercise any great effect upon the inflammatory process, but in the relief of the pain caused by such conditions, it is infinitely superior to anything which I have tried. It has been recommended for the relief of painful joints, but its power in this respect is much inferior to its action in those cases where the source of the pain is cutaneous only.

In the treatment of boils and carbuncles (Chapter V., 'Goutiness,' p. 184) a mistake which is often made is that of allowing them to heal prematurely by scabbing, with the result that the retained poison shortly seeks exit by a neighbouring hair follicle, and another boil is the result. An old woman's remedy, consisting of a mixture of sugar and soap, is very effectual in preventing this. A. E. Wright explains this efficacy by showing that this curious combination prevents the lymph from clotting, and as a scab consists of clotted lymph, the effect of the soap and sugar is to keep the door open for the exit of the poison. It is often said that boils should not be poulticed or fomented, because such applications are apt to produce a crop of smaller ones in the neighbourhood. Poultices are not easily rendered aseptic, but they can be applied with safety if the skin be first smeared with thymol vaselin. Fomentations wrung out of boracic solution are usually quite safe, but even here the use of the thymol ointment is an advantage, because the vaseline lessens the chance of irritation from slight scalding.

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BISMUTH.—In connection with the internal administration of this most excellent gastro-intestinal sedative, most of what is necessary has been said in Chapter II. I revert to the subject here to emphasize one or two points in relation thereto. It was at one time believed that the value of the powder form of the drug in cases of gastric ulcer was due to a mechanical action. The powder was supposed to spread itself out on the floor of the ulcer, and thus afford a protection against the action of irritants. Although there seems to be very little to support this theory, I am quite of opinion that the solid forms are preferable to the liquid, and that of these the subnitrate is infinitely the most useful and reliable. I have always found it superior both to the oxide and carbonate. The liquor bismuth et ammonii citratis is the best of the liquid forms, and, as it is practically tasteless, it can be so combined as to make an agreeable mixture. Bismuth in any form taken over long periods of time is liable to cause (1) a garlic odour in the breath, (2) increased pungency of the axillary secretion, and (3) pruritus and irritation in the vicinity of the anus. These are all very inconvenient to the patient, and the drug should be stopped as soon as any of them arise.

Bismuth is also valuable when used externally. Sir Thomas McCall Anderson speaks in the highest terms of the following ointment as a sedative in eczematous and other irritating eruptions, and my own experience fully bears out his recommendation:

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℞. Bismuthi oxid. ... ... ʒii.
Acid. oleic. ... ... ʒii.
Ceræ alb. ... ... ʒvi.
Vaselin ... ... ʒii. ʒii.
Ol. rosæ ... ... mi.

M. Ft. ungt.

Another soothing combination containing bismuth is the following cream :

℞. Zinci oxid. }
Bismuthi carb. } ... ... āā ʒi.
Glycerin. carbol. ... ... ʒii.
Glycerin. amyli ... ... ʒi.
Lin. calcis ... ... ʒi.

M. Ft. cremor.

A useful lotion of similar composition is :

℞. Bismuthi carb. }
Calaminæ } ... ... āā ʒi.
Mucilag. tragacanth. }
Aquæ calcis ... ... ʒiv.
Aquam ... ... ad ʒi.

M. Ft. lotio.

FORMALIN.—This is an aqueous solution (about 35 per cent.) of formic aldehyde, which has very considerable bactericidal and preservative powers. In watery solutions, even when these are weak, it acts as an irritant on the skin and mucous membranes. When combined with glycerine, however, the irritant effect seems not to occur. Jordan[1] has shown that in a combination of 1 to 4 per cent. (formalin, 1½ to 5 minims ; glycerine, 2 ounces) it is a

[1] *Lancet*, 1901.

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most valuable local remedy in aphthous stomatitis, ulcerative stomatitis, and septic throats, and that so used it produces no caustic effect whatever. Employed similarly, it is a convenient, painless, and effective application in parasitic diseases of the skin.

Formalin is given internally in two forms, urotropin and helmitol, both of which produce a very decided bactericidal effect upon the urine. Urotropin is produced by the action of ammonia on formalin, and is given in 10 to 15 grain doses. It tends to check ammoniacal decomposition, probably owing to its bactericidal action. This action is very decided, and the employment of urotropine has in consequence become almost a routine measure in typhoid fever—not so much for its effect upon the patient as for its power of disinfecting the urine before it leaves the body, and thus helping to provide against the spread of the disease. Urotropin is also used with great success in the cystitis due to the Bacillus coli communis.

Helmitol is a combination of formalin with citric acid. It is more efficacious than urotropin in certain cases. Urotropin may always be trusted to disinfect an acid urine, but its action on a urine which is alkaline is liable to be disappointing. If the alkalinity is due solely to the presence of bacteria in the bladder, then urotropin may be relied upon to check the decomposition, but if the alkalinity is due to other causes the effect of urotropin is doubtful. Helmitol, on the other hand, will render acid a urine which is alkaline from any cause, and will at the same time disinfect

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it. As a general rule, therefore, urotropin should be given when the urine is acid, and helmitol when it is alkaline.

CHLORIDE OF CALCIUM.—This drug has been shown by A. E. Wright to increase very notably the coagulability of the blood, and it has in consequence been much and successfully employed in all exudative conditions, more especially of the skin. Chilblains, urticaria, erythema, and purpura, are all much ameliorated by its use, and the tendency to the formation of blisters (as from rowing, cricket, and the like) is very much lessened during the time the drug is being taken. Savill[1] has extended still further the practical value of the salt by showing that many cases of itching are caused by a species of subcutaneous exudation which disappears under the treatment by calcium chloride, and he has effected some very noteworthy cures by exhibiting the drug in cases of pruritus pudendi and pruritus ani which had for years resisted every other form of treatment.

Apart from calcium chloride, the best symptomatic remedy for urticaria is magnesium sulphate; for erythema, quinine.

Mayo Robson and others have utilized the power of calcium chloride in coagulating the blood for the purpose of providing against hæmorrhage, or of checking it when it occurs. Thus it is given to women for some days before expected childbed, and to patients on whom it is necessary to perform opera-

[1] *Lancet*, August 1, 1896.

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tions in which bleeding is difficult to control. The dose of calcium chloride may reach as much as 1 drachm three times daily without fear of ill effects, but it is usual to begin with smaller doses. It has an unpleasant taste, which is, however, sufficiently well disguised by extractum glycyrrhizæ liq. and aqua menthæ piperitæ.

Savill,[1] in giving the following, says: 'Valuable for pruritus from any cause. Should be given three times a day after meals in gradually increasing doses. In hæmorrhage, uterine or pulmonary, should be given every two to four hours.'

℞.	Calcii chlorid.	grs. xx.
	Tr. aurantii	ʒii.
	Aquam chlorof.	ad ʒi.

M.

Wright[2] has recently applied his knowledge of the action of the salt so as to aid him in the very ingenious process by which he is able to distinguish between functional or transitory albuminuria, and albuminuria which is organic and permanent. To be able to arrive at a definite conclusion on this highly important, and often very difficult, question is of immense advantage to all concerned.

CITRIC ACID AND THE CITRATES.—The work done by A. E. Wright on the subject of the coagula-

[1] 'A System of Clinical Medicine,' vol. i.

[2] *Lancet*, April 2, 1904, and October 21, 1905; also *British Medical Journal*, July, 1894; *Lancet*, January 18, 1896; September 19, 1896; January 30, 1897; and Transactions Pathological Society, 1900.

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bility of the blood revealed the fact that, while calcium chloride notably increases this coagulability, citric acid produces the opposite effect. In doses of ½ drachm three or four times daily the acid causes a disappearance of the calcium salts from the plasma, thus rendering the blood much more fluid than it was previously. I have already referred to the therapeutic application of this fact in goutiness, and in skin eruptions such as acne and furunculosis, but I wish here to refer to another use which may be made of this property of the acid. In mitral stenosis the severe symptoms arise from the difficulty with which the blood passes through the narrowed mitral orifice. If the blood is viscid, the difficulty is increased; if it is fluid, the difficulty is diminished. I have now for some months been using citric acid in all cases of mitral stenosis, and although I am unable at present to speak positively, it has seemed to aid in relieving the back pressure upon which the symptoms depend.

The property of decalcification which is possessed by citric acid in the case of the blood is possessed by citrate of sodium in the case of cow's milk. Artus and Pages had shown that milk which had been treated with oxalates and fluorides did not curdle with rennet, and this they attributed to the fact that the lime salts had been precipitated by the action of the oxalates and fluorides. A. E. Wright[1] followed

[1] *Lancet*, July 22, 1893; Transactions of the Royal Medico-Chirurgical Society, vol. xxxv.; see also Poynton, *Lancet*, August, 1904.

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up this matter and demonstrated that milk-clots were formed in two different ways: (1) a firm clot, as with rennet, or with the human gastric juice; and (2) a loose clot, as by the action of an acid. He further showed that if the calcium salts be precipitated from the milk, the subsequent addition of rennet produces a clot of the second type, and not of the first. These facts he applied to the artificial feeding of infants, which is liable to present difficulties, mainly owing to the formation of indigestible clot as soon as the milk enters the stomach. Oxalates and fluorides being poisonous, Wright tried other precipitants for the calcium salts, and found that citrate of sodium answered all the requirements. The practical outcome of this is that if 1 grain of the citrate be added to each ounce of milk, not only may the danger of the formation of clot be entirely disregarded, but there is not, according to Wright, any necessity whatever of diluting cow's milk for infant feeding so as to approximate it to ordinary mother's milk. This last point is very important, and though at first sceptical, many observers have been found to give unqualified adhesion to Wright's views. The addition of citrate of soda is most valuable in insuring digestion of the large quantities of milk which are usually prescribed in the rest cure.

SARSAPARILLA. — This very old remedy has recently been much discussed in connection with tuberculosis and other chronic wasting and debilitating diseases. In the hands of Dr. Carter of Liver-

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pool,[1] it has produced most excellent results, and many of those who have been moved by his convincing advocacy to try it speak with enthusiasm of its efficacy. The preparation which Dr. Carter recommends is the decoctum sarsæ compositum concent. As to the doses, they should be large and repeated —that is, about ½ ounce three or four times daily. It is well to be careful of such large doses —at any rate, at first—for they not infrequently give rise to gastro-intestinal disturbance. If, however, small doses are administered at the outset, they may be increased gradually without fear of intolerance. There does not seem to be any explanation as to how this remedy produces its effects, but that it is—in some cases, at any rate—capable of bringing about results which are little short of marvellous there is no longer reason to doubt. Sir Felix Semon,[2] Professor Clifford Allbutt,[3] and others, have recently strongly testified to its value in syphilitic cachexia where mercury and iodides are unavailing.

[1] *Liverpool Medico-Chirurgical Journal*, January, 1906.
[2] *British Medical Journal*, January 13, 1906.
[3] *Ibid.*, March 24, 1906.

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CHAPTER IX.

INSANITY.

THE subject of insanity, though one which cannot properly be included in any category of minor maladies, is emphatically one of those to the understanding of which the ordinary text-book contributes but little. Some of its practical aspects seem, therefore, to come within the scope of this volume.

The most important thing to realize in connection with insanity is that it is a symptom and not a disease. We have to divest our minds of the idea that there is some special obscurity in connection with it, an obscurity of a different character from that which still surrounds such conditions as cancer, whose ætiology is still unfortunately hidden from us. Mental aberration is in many cases as much a physical condition as leukæmia or pernicious anæmia, inasmuch as it is due to some alteration either of the cortical cells themselves, or of the blood which nourishes them. Our ignorance of the subject and its difficulties, together with the fact that the symptomatology is almost purely mental, have combined to surround this department of clinical medicine

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with an atmosphere of mystery from which it is to the interest of everyone that it should be emancipated. The first step towards that emancipation is the recognition of the fact, which is no longer in doubt, that the great majority of cases of acquired mental alienation are due primarily to physical causes, the discovery of, and differentiation between, which are necessary to their ultimate removal.

This atmosphere of obscurity has had for its result the almost complete neglect of the question by those who are in a sense the most favourably placed for studying it in its earlier, and therefore its most remediable, stages—namely, the family doctor. It is no disparagement to the excellent work done by alienists to say that inasmuch as they seldom see the cases until the malady is pronounced, they are less favourably situated than others for observing and counteracting the early symptoms. It is no part of my purpose to enter into the diagnosis and treatment of mental diseases; rather do I wish to emphasize the position that, ignorance of the accepted classifications is no barrier to the appreciation of the fact that a departure from the normal is present in an individual case; nor need it deter the observer from undertaking an intelligent clinical investigation into the physical causes by which this departure has conceivably been provoked.

Insanity is still too often regarded, as in former times all disease was regarded, as a visitation of Providence, in the presence of which medical inter-

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ference is not only impotent, but impious. The obscurities of heredity, degeneracy, and other difficult social problems, rise up to lend support to this attitude. But while the power of such influences is neither to be gainsaid nor minimized, it seems necessary to insist that they are for the most part merely predisposing causes which might be successfully kept inoperative if the laws of normal development and healthy animal existence were more frequently insisted upon, for purposes both prophylactic and therapeutic. That a person who shows signs of insanity has had an epileptic father and an alcoholic grandfather is not a sufficient reason for abandoning him to the fate with which he is threatened. It is, however, a very good reason for inquiring into his habits and mode of life, for subjecting him to a minute clinical examination—for investigating everything, in fact, which may reveal any disturbance which, though slight in itself, may, nevertheless, be sufficiently powerful in the predisposed reflexly to upset the balance of higher centres.

In other words, we should learn to look upon insanity not as the result of causes which are necessarily subtle, remote, and irremediable, but as a state of the nerve cells to the production of which many causes have contributed. Some of these, the exciting, may be, and often are, recent and remediable, and the discovery and removal of these (a matter which is definitely within the sphere of the physician as distinct from the alienist) may well make all the difference between a mere transient

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melancholia and a state of matters which urgently demands institutional treatment.

In conducting a clinical examination it is essential to observe a definite routine, and to make careful notes of the findings as the examination proceeds. Necessary as this always is, from the point of view of overlooking nothing where there is any question as to insanity, it acquires, as will appear later, a very special importance, because of the fulness and accuracy in the matter of detail which are necessary to the filling in of a lunacy certificate.

The system which should first engage the attention of the examiner is, of course, the nervous system; and here, to prevent oversights, it is well to adopt a regional method, beginning with the head. After careful inquiries as to memory (especially for recent events), sleep, and pain, search should be made for physical signs. Having observed and noted the presence or absence of general facial asymmetry, the eyes should engage the most earnest attention. Both squint and ptosis are important, and in slight degrees, easily overlooked points. The size and equality of the pupils, and their reaction to light and accommodation, must be carefully tested, in each eye separately.

Nystagmus, even when present only on extreme lateral deviation, is very significant, and the search for it should on no account be omitted.

The detection of refractive errors, especially those which are moderate or slight in degree, is of paramount

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importance (*vide* Chapter IV.), and if there should be any doubt whatever on this point, the question should be referred to a specialist. There is no more fruitful source of grave disturbance of the higher centres than those slight ocular defects which, while not impairing the visual power, nevertheless impose a constant strain upon the ciliary muscle, and lead to exhaustion of the nervous system.

The fundus on both sides should be examined for commencing atrophy of the disc, for hæmorrhages, or for any other abnormality calculated to throw light upon the patient's condition.

Defects of articulation may be evoked by making the patient say difficult words, especially those involving the lips and tongue, such as 'parallelogram,' 'laryngological,' 'anæsthetical,' 'preliminary,' and sentences such as, 'The Irish artillery extinguished the conflagration.'

The state of the facial muscles is best ascertained by such directions as 'Screw up your eyes,' 'Show me your teeth,' 'Put out your tongue,' 'Blow out this light'; and while these directions are being carried out the examiner should be careful to note the existence of any tremor, and should study the relative strength of the contractions on the two sides.

Before leaving the face, the state of the mouth must be examined. Oral sepsis is a frequent and well-recognised cause of reflex irritation, so that if present in any degree, however slight, great care should be taken to detect and remove it.

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In the upper limbs, the force of the grasps on the two sides should be compared. Tremor and involuntary movements are best elicited by making the patient extend both arms together, and spread out the fingers of the two hands. He should then be directed to touch the tip of his nose with each forefinger separately, the eyes being closed. This will elicit intention-tremor, and ataxy. The condition of the supinator and triceps jerks should be tested.

In the lower limbs, any abnormality of gait or pose should be noted, and the muscles should be examined for wasting or rigidity. The patient should be made to stand with his heels and toes together, and close his eyes. If this, which is called Romberg's test, causes swaying or reeling, it indicates the presence of static ataxy. The knee-jerks must be tested, if necessary, with what is known as reinforcement—that is, by causing the patient to clasp his two hands together, and then to make an effort as if to pull them apart. Ankle clonus, if present, is very important, because it affords unequivocal evidence of the involvement of the pyramidal system. The same may be said of what is known as Babinsky's sign—namely, a definite extensor response of the great toe to plantar irritation.

The sensibility as to touch, pain, and temperature, should also be investigated, though it must be confessed that this is an ordeal which is apt to be a trying one where we have a stupid, inattentive, or morose person to deal with.

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Such an examination of the nervous system derives its importance from the fact that it will reveal the existence of any physical sign of organic disease which may be present in that system, and as these physical signs afford very valuable confirmatory evidence of mental instability, their aid in rendering a certificate convincing cannot be overestimated. Moreover, the nature of the physical signs, when present, will enable us to place the mental symptoms in their proper category. The discovery of nystagmus and intention-tremor, for example, will prevent us from attributing to mere hysteria, an emotional instability which is really due to disseminate sclerosis; in the same way that a slight 'perversion of the ego' will acquire a peculiarly sinister significance if we find it associated with unequal pupils and a knee-jerk which is either absent or exaggerated.

But, although I desire to emphasize the importance of deriving all possible assistance from the examination of the nervous system, my present purpose is rather to insist upon the responsibility of derelictions of duty on the part of other systems in bringing about the state of matters which we are considering. Dr. Graham Crookshank[1] says: 'No case of neurosis, neurasthenia, or borderland insanity should ever be treated without the most careful reference to the condition of eyes, ears, nose, mouth, heart, lungs, stomach, bowels and pelvic organs.' The questions of ocular and

[1] 'The Management of Early, Transitory, and Ill-defined Mental Disorders,' *Clinical Journal*, January 25, 1905.

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nasal defects have already been considered (*vide* Chapter IV.). The importance of attention to the state of the mouth has been mentioned above, and may be here reinforced by another quotation from Dr. Crookshank: 'Attention to oral hygiene is of vast importance. It is not an exaggeration to say that cases of alcoholic insanity have been cured by the dentist.' And not alcoholic insanity only, but other forms which are due to absorption of toxins from the mouth, and to digestive disturbances consequent upon deficient mastication.

The responsibility of the intestinal tract for the manufacture and distribution of poisons which cause functional derangements in the central nervous system is now so well recognised that it scarcely needs a reference. Chronic constipation vies even with syphilis and alcohol in the multiplicity of its morbid consequences and their magnitude. Among these consequences mental troubles occupy the foremost place, and there can be no doubt that if patients in the early stages were adequately purged of their toxins, the number who ultimately come to certification would be considerably reduced. Robert Jones[1] very properly deprecates the advice so often otiosely given by the uninstructed, that patients suffering from incipient insanity should travel. Certainly, aimless travel is not only useless, but dangerous; but travel undertaken with a view of reaching a spa with

[1] 'How to Treat a Case of Insanity,' *Lancet*, December 26, 1903.

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purgative waters, such as Carlsbad or Brides-les-Bains, is a very different matter. It is quite certain that an annual course of treatment at such a place constitutes the salvation of many people who would otherwise from time to time be threatened with mental instability, a fact which is worth remembering when we have a difficult patient or recalcitrant relations to deal with.

Derangements of the reproductive organs, especially in women, are perhaps the most fruitful cause of those slight departures from the normal to which the name 'borderland' is applied, and no pains should be spared to discover and rectify any defect which may exist. Adolescent insanities in girls often begin with constipation, anæmia, and amenorrhœa.

In the cardio-vascular system the most important matter to investigate is the condition of the blood-pressure (*vide* Chapter V.). Slight mental troubles are very often associated with, if, indeed, they are not directly caused by, an increase of the blood-pressure. This factor, as being remediable in its earlier stages, is of more importance to the investigator than the state of the heart itself, more especially as cardiac troubles are so often secondary to an increase of peripheral resistance.

Finally, it should not be forgotten that delirium due to typhoid or pneumonia has not infrequently been mistaken for acute mania, a fact which emphasizes the importance of a thorough physical examination, not only in slight and borderland cases,

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but also in the case of those who are demonstrably and grossly insane.

There is yet another advantage of approaching every mental case as though it were one of physical derangement, and that is the effect produced upon the patient. A medical man is frequently asked to adopt 'a ruse' in order to see the patient—by announcing himself as the greengrocer calling for orders, the man who winds the clocks, or something equally absurd. To this he should never consent. He should, on the contrary, insist upon appearing in his true capacity, and lose no time in explaining to the patient that the object of his visit is to examine into the latter's health. If, now, the method of examination is physical, the patient's confidence is at once secured, and he is far less liable to suspect that the object of the visit is 'to send him to an asylum' than if some method is adopted with which he is unfamiliar. Nothing in these cases is ever gained by deception.

If physical examination succeeds in eliciting some recognised cause of insanity, the removal of which affords a reasonable hope of rapid improvement, then the propriety of undertaking the treatment at home should be duly considered. The question of home *versus* institutional treatment is a difficult one, which can only be satisfactorily decided in view of all the circumstances of a particular case. On the one hand, there is the very natural dislike of the stigma attaching to asylum treatment, and the fear of the

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consequences which such a stigma may entail even upon unborn generations. Moreover, institutional treatment is expensive, and expense may be a very serious consideration, especially where the patient happens to be the bread-winner. On the other hand, it is a sad and significant fact that the dislike of an asylum, natural, and in a sense laudable, though it be, is responsible for many cases reaching the incurable stage which might have been cured had they been subjected to expert treatment in the first instance. The treatment of insanity is a very special matter, and general practitioners would be well advised if they refused to undertake it unaided, unless they felt very sure that a particular case was well within their competence. If home treatment is strongly desired by the relatives of the patient, the best course to pursue is to refer the whole question to an experienced alienist, under whose advice the practitioner may carry out the home treatment, should this be decided upon. Unless he has had special experience, the family doctor should make it a rule to refer the question of the treatment of all cases of insanity to an expert, in the same way and for the same excellent reason that he habitually refers all cases requiring abdominal section to a practising surgeon. The cases suitable for home treatment are given by Robert Jones[1] as follows: 'Forms of insanity referred to malnutrition, such as those caused by excessive lactation, or the conditions accompanying

[1] *Lancet*, December 26, 1903.

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the puerperal state; transient toxæmic states, such as those due to drink or drugs, and the temporary insanities of young persons; quiet and harmless weak-minded cases; and certain cases of general paralysis in the last stage, whose friends are desirous of avoiding the much-felt stigma when a father or husband is said to have died in an asylum.'

When no doubt exists that a person is sufficiently insane to demand or warrant his removal from home, the proper course to pursue depends upon whether that person is a 'private patient' or a 'pauper'; whether, in fact, he is sufficiently well off to contribute something towards his keep in an institution, or whether, removed from his means of livelihood, he is penniless.

In the case of a 'pauper,' notice of the fact and circumstances should at once be given to two functionaries—namely, the parish doctor and the relieving-officer. No harm is done by notifying yet a third—namely, the head of the police in the immediate district. As soon as these officials have received proper intimation the responsibility of the ordinary medical man is at an end, except that he may be called upon by the magistrate to furnish particulars. These functionaries are bound by Act of Parliament to take the necessary steps within three days of receiving the notice.

In the case of a private patient, there are two methods of procedure: (1) An urgency order, and (2) an ordinary petition, with statement, two medical certificates, and a justice's order.

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1. Urgency orders should only be employed in cases which are in reality urgent. They do not obviate the necessity for the ordinary certification; they merely postpone it for a few days, and they cause a great deal of extra trouble to all concerned.[1] An urgency order consists of—(*a*) an order signed by one person, who must be an adult friend, preferably a relative of the patient; and (*b*) a medical certificate signed by a qualified practitioner, preferably the usual medical attendant of the patient. These two—the relative and the doctor—must have seen the patient within two days of the time that each signs his respective document, and they must not be related to one another. The order holds good for seven days, within which period the ordinary petition, with two medical certificates and a justice's order, must be provided. The medical man who signs the urgency certificate may also sign one of the subsequent medical certificates, and he may frame the latter on the same interview, and even couch it in the same language as the urgency certificate, provided that the ordinary certificate is furnished within three days of the urgency order. The manager of an institution, if he has room, will admit a patient on an urgency order forthwith.

Forms for urgency orders and ordinary certificates ought always to be in the desk of every medical practitioner. They may be obtained from Messrs.

[1] 'Insanity,' E. G. Younger, Medical Monograph Series, No. VIII. (Baillière, Tindall and Cox).

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Shaw and Sons, Fetter Lane, E.C., or from the authorities of any licensed house, mental hospital, or asylum.

2. In the case of a private patient, the procedure, although it may at first sight seem complicated, is in reality very simple. When it is decided that institutional treatment is necessary, the superintendent of the selected institution should be communicated with without delay. If the practitioner has not any certificate forms in his possession, the said superintendent will supply all that may be necessary. The nearest relative (preferably the father, mother, husband, or wife of the patient) is supplied with certain forms, which must be duly signed, and it is in most cases desirable that the medical man should assist at the signing.

Two medical certificates are necessary, one of which ought to be signed by the medical practitioner in ordinary attendance upon the case. The other may be signed by any medical man, provided he is neither related to the patient nor in any way connected with the institution to which the patient is to be sent.

Inasmuch as the law demands that one certifier shall be the usual medical attendant, and requires reasons to be given if this be not the case, it is obvious that anybody may be called upon to fill in a lunacy certificate at any time. There was at one period considerable danger in certifying an insane patient. Some of these people are very litigious, and are apt to bring actions against all those concerned in their detention if they should ever be set at liberty.

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There is now no fear of any difficulty arising, if only the certifier will take ordinary care. The Act of 1890 protects him fully, even abundantly, if he will realize what his responsibilities are in connection with the making out and the signing of the certificate. First, then, the certificate should be drawn up with the feeling that it is a document upon which the certifier may conceivably, at some distant date, be cross-examined in open court. Although, as has just been pointed out, there is no serious danger of this, yet it is always well to be provided against every possibility, and if every certificate were drawn up with the spectre of a cross-examining counsel at the writer's elbow, it is very certain that not a single case would ever come into court.

It is not sufficiently appreciated that if any proceedings are taken against a person for signing a lunacy certificate, such proceedings may be stayed upon summary application to the High Court, or to a judge thereof, if the court or judge is satisfied that there is no reasonable ground for alleging want of good faith or reasonable care (Lunacy Act, 1890, Section 330, subsection).

This subsection represents the medical practitioner's Magna Charta in matters relating to the certification of the insane. Section 330 protects him from losing an action if he has acted in good faith and with reasonable care, but it does not prevent proceedings being instituted. The subsection goes further, and provides means for stopping an action if there is no

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ground for alleging want of good faith and reasonable care.

Now, in order successfully to invoke the aid of this subsection, the certificate must be so framed as to impress the judge that extreme care has been taken in every detail. Medical men are in the habit of indicting a lunacy certificate much in the same spirit as that in which they indict a certificate for a club, stating the inability of one of its members to follow his ordinary employment. It should be remembered, however, that there is an essential difference between a lunacy certificate and any other medical certificate. This difference resides in the fact that whereas in the latter the doctor's opinion as an expert is accepted; in the lunacy certificate it is not. It suffices for a qualified man to write, 'In my opinion this person is suffering from pneumonia,' but it does not suffice for him to write, 'In my opinion this person is suffering from insanity.' The club authorities unhesitatingly accept the one, the Lunacy Commissioners peremptorily reject the other. Successfully to frame a lunacy certificate it is necessary to include facts—not deductions, but facts—which will carry conviction of the patient's insanity to a person, or a set of persons, who have never seen the patient.

Extreme care and due elaboration of detail are thus essential, not only to the validity of the certificate, but also to that immunity from vexatious legal proceedings which the Act of 1890 seeks to confer on the conscientious certifier. For the certificate must not

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only convince the authorities of the fact that the patient is insane, but it must also be capable of convincing a judge of the High Court that so much particularity has been exercised in its framing, that there is no ground whatever for alleging 'want of reasonable care.'

The examination of a supposed lunatic should therefore be approached with a grave sense of responsibility; and the first thing to remember is that notes should be carefully taken at the time of the examination, and as carefully preserved thereafter. This is a precaution which should never, under any circumstances, be omitted. It is always well to seek an interview with one or more responsible members of the patient's household or family before seeing the patient, in order that some idea may be gleaned as to the form of insanity which may be present. The full names and addresses of such persons should be carefully noted, together with their relationship or nature of connection with the patient. Facts—not beliefs or opinions—which are communicated by them are not absolutely necessary to the due execution of a certificate, but they materially strengthen the document, and should therefore be studiously elicited, carefully sifted, and accurately recorded.

The interview with the patient should be approached in much the same spirit as the student approaches the clinical case given him for report at his final examination. Nothing should be omitted which can be

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elicited. Age, occupation, family history, past illnesses and attacks, should be accurately taken down in writing, and every abnormality which a thorough physical examination has brought to light should be recorded, whether such an abnormality may seem to the examiner to have an immediate bearing upon the case or not. It is infinitely better to make the report too full than to leave it too meagre.

When the time comes for drafting the certificate the great point to be borne in mind is that it is facts which are wanted, and not conclusions; evidence, and not a verdict. The conclusion or verdict is implied—namely, that the person is insane; but the facts, the evidence upon which the conclusion or verdict is reached, must be set forth clearly and in detail. It is well to avoid the use of technical terms, such as 'delusion,' 'illusion,' and 'hallucination,' because one, at any rate, of the people whom the certificate is intended to convince may have a very hazy idea as to the meaning of such terms. Attention to the ordinary rules of syntax, with clearness and accuracy of statement, being essential, it is advisable to employ the present tense of the indicative mood, as ambiguity is then less liable to creep in. Thus, the certifier should begin his sentence with 'the patient states' this, or 'he does' that, instead of, as is too often done, using the present participle—*e.g.*, 'going into the street in her nightgown.' The completed certificate should be a reasoned, orderly, coherent document, bearing on its face the fact that it is the work of an

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educated man, who has brought to its composition the desire succinctly to convey positive information to responsible people who have no other means of forming a conclusion upon a matter of the highest importance.

It is scarcely necessary to add that, after efficiency, brevity is one of the most valued attributes of a lunacy certificate. These documents have not only to be perused by several people, but they have usually to be copied many times over. Nevertheless, desirable as it is, brevity should not be attained at the expense of adequacy, nor should it be sought for outside the rules of ordinary syntax.

Before a lunacy certificate is sent in the certifier should read it critically, and ask himself two questions concerning it. The first is: 'Will this convince a person who has never seen the patient that the latter is insane?' The second is: 'Will this convince a judge of the High Court that I have used every possible care, both in examining the patient and in drawing up the certificate?' If it is possible for a negative reply to be given to either of these questions, then the document must be redrafted, even though this should entail a second interview with the patient. It is only by constituting himself his own severest critic that the certifier can hope to satisfy others.

The two medical men who certify a patient to be insane must act separately and apart. They must not visit the patient together, and each certificate

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must be made out independently of the other. When the certificates are complete, they, together with the petition and statement, must be ratified by a justice's order. The justice may be a County Court judge, a stipendiary magistrate, or a magistrate *specially appointed.* An ordinary justice of the peace has no authority to sign these orders.

Briefly to recapitulate; the procedure in the case of a private patient for whom institutional treatment has been decided upon is as follows:

1. Communicate with the authorities of the selected institution as to the reception of the patient, and, if necessary, obtain from them the forms for petition and certificates.

2. As soon as these forms are to hand, see that the petition and statement are duly and accurately filled in by the nearest available relative.

3. Arrange with another medical man (not a partner or assistant) separately to examine the patient and draw up his certificate.

4. Examine the patient and certify.

5. The petition and statement, together with the two medical certificates, being complete, the reception order (which will be found on the same sheet as the petition and statement) must be signed by a County Court judge, or a stipendiary magistrate, or a justice of the peace specially appointed. This official may or may not wish to see the patient before signing the order.

6. The necessary documents being thus complete,

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they are to be taken, within seven days of their completion, by the person who accompanies the patient to the institution, and handed by him to the manager, whose authority they constitute for detaining the patient. Copies of these documents are forwarded by the manager to the Commissioners in Lunacy.

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INDEX.

ABDOMEN:
palpation of, in chronic constipation, 84
Abdominal muscles:
importance of exercising, various forms of exercises, 267-70
inactivity of, a cause of chronic constipation, 78
Abdominal pain relieved by belladonna, 308
plethora benefiting at Evian, 234
Acetanilid in relief of neuralgic and neurotic pains, 135, 136, safety of, if properly employed, 135, dosage of, 136, how best administered, 136
Acid, formation of, in sthenic dyspepsia, 50
Acids, value of certain, in treatment of gout, 167
Aconite:
for high arterial tension, obvious drawbacks to use of, 201
in septic throat neither diphtheritic nor rheumatic, formula for, 29
tincture of, in treatment of tonsillitis, 27-8
Adenoids: in relation to—
colds, 3
flatulence, 64
headache, 147
non-operative means of removing, 13
Addison's disease:
diarrhœa an early symptom in, 98-9
Addison's disease:
hiccough a complication in, 66
Adhesions between stomach and neighbouring organs, operative treatment needed for dyspepsia due to, 59
Aerated waters, 'wholesomeness' of, a comment on, 263-4
Age (*see also* Old people) in relation to—
curability of chronic constipation, 91, 93-4
giddiness, its usual meaning, 108
gout, 157-8
lumbago, 124, 125
persistent diarrhœa, 99
rheumatics, 116-7
urinary incontinence, 308, 311-12
Ailments (as distinguished from diseases) benefiting by bracing climates, 219
Air, swallowing of, a cause of flatulence, 64
impure—deleterious contents of, 249-50, deleterious consequences of breathing, 250, 253
pure—standard for, 249, need of adequate supply of, to maintain general health, 249
Air-passages, gouty affections of, 156
Aix-la-Chapelle, sulphur-water spa, 236, 295
Aix-les-Bains, sulphur-water spa, 236

Digitized by Google

Aix-les-Bains for fibrositis in various forms, 121, 124
for gouty arthritis, 180 *note*
Albumin, absence of, not conclusive of absence of kidney disease, 101
Alcohol:
abuse of, a cause of—
arterio-sclerosis, 188
gout, 158-60
headache, 150
high arterial tension, 82
rheumatics, 116, 118
forms of, best suited in cases of anæmic neuralgia, 130
stimulant to overeating, 262
forms in which now taken discussed, 262-3
the best form and time for consumption of, 264
Alcoholic drinks forbidden in high arterial tension of gouty origin, 199
Alcoholics:
digitalis well borne by, 287
typical cough of, 17, 18
Alcoholism:
hiccough frequent in, 66
treatment of, by atropine and strychnine, after-results of, 311
Alimentary tract, the:
gouty affections of, and their treatment, 185
Alkalies:
administration of, before meals, as treatment for dyspepsias, action of, and its benefits, 41-2, probable reason for this, 50, injurious in asthenic, beneficial in sthenic, dyspepsia, 45
Alkaline mixtures for relief of indigestion and its symptoms, 68-9
Allbutt, Professor Clifford, *cited*:
on pulse-testing for state of tension, 193
on the value of sarsaparilla in syphilitic cachexia, 321
Aloes said to enhance the action of iron, 304
'Alterative' quality of mercury, 295-6
Althea, powdered, with carbolic acid and liquorice powder, in pills for flatulence, 64
Amenorrhœa a cause of adolescent insanity in girls, 330
Anæmia:
a cause of adolescent insanity in girls, 330
a cause of neuralgia, 130, location of the pain due to, 131
diet in, 130
treatment of neuralgia so caused, 130-1
Anæmic patients:
benefiting at Spa and Schwalbach, 235
intolerant of stronger forms of iron, benefited by arsenic in combination, 303-4
Anæsthesia more characteristic of hysteria than hyperæsthesia and neuralgia, 133
Anæsthetics:
vomiting after, bromide of potassium enema useful in, 284
Aneurism in relation to cough, 17
digitalis contra-indicated in, 285
pain of, value of iodide of potassium in relief of, 276
Angina pectoris simulated by the manifestations of sthenic dyspepsia, 59
Anginal attacks, causes of:
high arterial tension, 178
sthenic dyspepsia, 50
Ankle clonus important in relation to insanity, 327
Antacid, urgent need for, in cases of sthenic dyspepsia, 47, when administered, 47, 49-50
Antifebrin, *see* Acetanilid

Digitized by Google

Antineuralgic drugs in treatment of—
facial or cranial neuralgia, 135
general wherever located, 135
ill-defined pains, 135
sciatica, 128
Antimony, action of, on the heart, 10
Antiseptic properties of calomel, extreme value of, 75
Antiseptics in enemata, desirability of, 75, 91
Antipyrin and salicylate of sodium in treatment of fibrositis, 119
Antitoxin in diphtheria, 23
Anus, fissure of, a cause of diarrhœa, 99
Aortic regurgitation, digitalis in, dosage important, 287
second sound, modifications in, in gouty arterio-sclerosis, 196-7, 203
Apathy, abnormal, in chronic constipation, 83
Appendicitis, hiccough a symptom in, 66
Aphrodisiac qualities of belladonna, etc., 311-2
Appetite in sthenic and asthenic dyspepsia, 44, 56
Arabella (and similar) mineral waters suited to sthenic dyspeptics with chronic constipation, 92, value of in gout, 168 *note*
Arcachon:
sedative climate of, 217
suited to chronic kidney cases, 222
Arcus senilis, what its presence indicates before forty, 143
Arsenic (*see also* Fowler's Solution), 302 *et seq.*
to check tendency to chilblains, 308
in combination with HCl and strychnine—
for gastric asthma, 277-8
Arsenic in combination with HCl and strychnine, formula for, 278
Arsenic, errors regarding, 302, 303
Arterial tension:
effect on, of digitalis, 285
high, benefiting at Evian, 234
causes of, 32, 200
consequences of, direct and indirect, 178
danger of digitalis in, 203-4
diseases and conditions in which present:
asthma, 188
false angina, how caused and how reduced, 61-2, logical issues of, 63
in gout and of gouty origin, 170, 178, 198
at the menopause, 201
how to detect, 198 *et seq.*
treatment for, its aims and methods, 198 *et seq.*
Arterio-sclerosis:
importance of, urged on consideration, 198
in connection with gout, 157, 177, and kidney disease, 186 *et seq.*, the curable stage, 189, how diagnosed, 190 *et seq.*, how lessened, treatment for, 198 *et seq.*
a result of over-eating and sthenic dyspepsia, 53, due to high arterial tension, 63, 78, toxins giving rise to, 177, 186, 188
results arising from, 198
treatment of, 198 *et seq.*
value of iodide of potassium in, 275
Arthritic condition in children usually due to tubercle, 182

Digitized by Google

Arthritic patients benefiting at Evian, 233
Arthritis:
chronic, due to gout, 179
varieties of and treatment for, 179 *et seq.*
treatment for, 180 *et seq.*
Arthropathies, accidental and essential, 112
Articulatory defects in relation to insanity, 326
Artus and Pages *cited* on the action of oxalates and fluorides on milk, 319
Aspirin in treatment of—
aural vertigo, 107
feverish cold, 31
fibrositis, 119
gout, 166-7
Asthenic dyspepsia (*see also* Atonic *and under* Dyspepsia), 38
a typical case of, symptoms and treatment of, 55 *et seq.*
Asthma:
diet in relation to, 277
discriminated from dyspnœa, 191
often of gouty origin, 183
treatment for, 183
symptom, not disease, some causes of, 277
treatment of, an unpopular but valuable method for, 277
gastric, causes and treatment of, 277-8
spasmodic, value of iodide of potassium in, 277
Asthmatic attacks associated with sthenic dyspepsia, 46, 50, sometimes due to loaded rectum, 73
Astigmatism and eyestrain, 139
indication of, on examination, 143
Astringents in relation to diarrhœa, 96, 97, 99
Athletes prone to gout in middle life, 158
Atmospheric change one of the causes of rheumatics, 117
Atomizers, use of, in laryngeal catarrh, 7
method of employing, 8
solutions for use in, 7, 8
Atonic dyspepsia (*see also* Asthenic dyspepsia), the essential condition, 55, classes chiefly affected by, 55
Atropine in gouty affections of the eye, 185
and strychnine in alcoholism, after-consequences of, 311
Aural neuralgias, relief of, by local leeching, 137
troubles as causes of headache, 144
vertigo, aspirin for, 107
Auscultation less important than percussion of the heart, 27
Auto-intoxication in gouty, 186
consequences of, 187
Autumn, epidemicity in, of tonsillitis, 26

Babinsky's sign in insanity, 327
Bacillus of influenza, 19
Back, pains in, symptom of chronic constipation, 82
Baden-Baden for fibrositis, 121
Baldness (*see also* Hair, falling of)—
cause of, 246-7
prevention of, 247
early, associated with gout, 184
Bath, mineral water spa of, for—
fibrositis, winter treatment of, 121
gouty arthritis, 180 *note*
heart disease, 223
Nauheim treatment obtainable at, 239
Baths:
in chronic renal disease, 221
in relation to general health, 270-1

Digitized by Google

Baths:
as skin stimulants, various forms of, need of supervision of, 175
cold, matutinal, 245, 270, temperature for, 246, advantages of, its action on the skin, 246, 270, disadvantages of, 118, 271
hot, temperature of, 271, duration of, 271-2; in treatment of colds, etc., 8, diarrhœa, 96, 98, fibrositis, 118
warm, temperature of, 271, best substitute for the cold bath, duration for, 272
electric, in sthenic dyspepsia, 47
electric light, in treatment of gouty arthritis, 180
hot air, in treatment of gouty arthritis, 180
hot water and hot air, relief given by, in dyspepsias, 43, 47, 62
radiant heat, in fibrositis, various forms of, 118, 120, 124, in gout, 176
tepid, temperature of, 271
Turkish, pros and cons of, 175-6
in sthenic dyspepsia, 47, 62
Bayliss and Starling, researches of, on the action of hydrochloric acid of gastric juice in pancreatic digestion, 39
Beale, Lionel, *cited* on senna in prunes as infantile laxative, 89
Bed, when to keep patients in, 8, 20, 125, 306, 390
Beer in relation to gout, 159
Belladonna, its uses, 308 *et seq.*, and drawbacks, 311
in aural vertigo, 107
in chronic constipation in old age, 93-4
in intestinal flatulence, 65
Belladonna in ovarian neuralgia, 133
Bermingham nasal douche, the, 4
Bicarbonate of soda as an antacid in sthenic dyspepsia, drawbacks to use of, 47, unwisdom of combination of, with subnitrate of bismuth, etc., 49, use of, in poultices, etc., for gouty joints, 181
Biliary colic, *see under* Colic
Bilious headache, vomiting associated with, 102
Biniodide of mercury, bactericidal action of, 24, in suspected diphtheritic sore throat, 23-5, 302, formula for, 24
Bismuth as antacid in sthenic dyspepsia, 47, need of large doses of, 48, admixtures of, with other drugs, 48-9, proper time for administering, 49
as gastro-intestinal sedative, 170, 313-5, formulæ for, 314, 315
in combination, for kidney stimulation, 62, for vomiting, 106
inconveniences from the use of, 314
in powder form, 313
Biurate of sodium in relation to gout, 169
Bladder, gouty affections of, 157
Blisters (medicinal):
in gouty affections of the eye, 185
in headache (obstinate), 152
in ovarian neuralgia, 134
from games or hard work, tendency to, reduced by taking chloride of calcium, 317
Blood:
coagulability of, increased by chloride of calcium, Wright *cited* on, 316, how utilized against hæmorrhage, 317

Digitized by Google

Blood :
fluidity of, promoted by citric acid, 318
application of this fact to mitral stenosis, 319
Blood-letting in treatment of high arterial tension, 200
Blood-pressure :
in exophthalmic goitre generally too high, 309
high, value of iodide of potassium in morbid conditions due to, 295
higher than normal a contra-indication to the cold bath, 271
increase in, a cause of slight mental troubles, 320
Blood-states causing—
headache, 149, 152
chlorosis, 149
leukæmia, 149
neuralgia, 129-30
toxæmias, 149 *et seq.*
Booklet waters used at Kissingen, 236
Boils and pustular eruptions, *see also* Furunculosis :
causes of, 183 [313
treatment for, 184, 301, 312,
Borax, in pruritus pudendi, ointment or lotion of, formula for the latter, 300
Bourbon-Lancy :
cases likely to benefit at, 239-40
elevation of, 240
Bournemouth to the Land's End, watering-places on the coast suited to chronic kidney disease, 222
Bowel, the lower, seat of constipation, 70
secretions, action on, of belladonna, 65
washing out by (antiseptic) soap-and-water enema, 75
Bowels :
condition of, in relation to—
colds, etc., 8, 11
dyspepsia, 42-3
Bowels :
stimulation of, in dyspepsia, means for, 62, 65
vascular contraction in, effects of, 191
Brachial myalgia, 122-3
Bracing climates :
cases to which suitable, 218-19
definition of, 216
headache due to, medicine for, 148
instances of, 217
more agreeable, as a rule, 219
physiological effect of, 217
Brain, gouty affections of, 156-7
Brain-work :
a cause of arterio-sclerosis, 188
in relation to appetite, 266
Breath, offensive, in chronic constipation, 84
Breathlessness (*see also* Dyspnœa), important as a symptom of arterio-sclerosis, 197
Brides-les-Bains, type of invalid to whom suited, 87, 229-30
British Isles, temperature of, wide variations in, 215
British spas :
for cure of gouty arthritis, 180 *note*
for summer and winter treatment of fibrositis, advantages of, 121
Broadbent, Sir William, *cited* on spa treatment for cardio-vascular diseases, 238
Bromide of ammonium as preventive of sea-sickness, 104
Bromide of potassium :
for aural vertigo, 107
deleterious effects on old people, 283
dosage with, etc., 284
Bromides in treatment of—
migraine, 146
nervous diarrhœa, 96
Bronchitis :
sedative climate good for, 223-4

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Bronchitis:
chronic, of gouty origin, treatment for, 182-3
Bronchitic persons, why city fog is injurious to, 214-5
Brown, Dr. Langdon, article by, on Pawlow's researches on gastric digestion *cited*, 38 *and note, et seq.*
Brunton, Sir Lauder, cited on bismuth, 47
Buchu, infusion of, as diuretic in treatment of gout, 170
Buckley, Dr. C. W., *cited* on humidity, absolute and relative, 213 *and note*
Butyl-chloral in sciatica, 128
and gelsemine pills for facial and cranial neuralgia, 135
Buxton:
bracing climate of, 217
for fibrositis, summer treatment of, 121
for gouty arthritis, 180 *note*
Nauheim treatment obtainable in, 239

Caffeine as a heart tonic, 151
Calcium pills in treatment of boils, 184
Calculi, renal and vesical:
effects on, of Contrexéville waters, 231
in the ureter, belladonna for, 310
in women, symptoms similar to those of ovarian neuralgia, 37
Calomel:
dosage of, in chronic constipation, 90, varying effects with varying quantities, 297-9
as hepatic stimulant, 75
intestinal antiseptic and purgative in dyspepsias, 43, 47
as purgative, the best, 74, best way of giving, 74-5
Calomel:
in gout, a warning, 169
in night terrors, due to constipation, etc., 83
in pruritus ani, 300
in sthenic dyspepsia with anginal attacks, 26
Calomel, or gray powder, administration of, to children, Murray *cited* on, 302
Camphor liniment in treatment of myalgia, 123
monobromat with acetanilid in relief of neuralgia, 136
Canary Islands:
sedative climate of, 217
suited to chronic kidney cases, 221-2
Cannabis indica in treatment of headache, how best given, 152
Cantharides in relief of urinary incontinence of the aged, 311-2
Carbohydrates:
in diet, Hare's view *cited*, 254 *and note*, 255, 258
elaboration of, by the pancreas, 39
Carbolic acid in pill combination for flatulence, 64
Carcinoma of stomach and intestines, hiccough associated with, 66
Cardio-vascular disorders, spa treatment of, 237, Broadbent's views on the subject, 238
Carlsbad:
cases likely to benefit at, 87, 224
compared with Vichy, 228
constituents of the waters, 224, 228
elevation at, 228
Carter, Dr., *cited* on—
value of succinate of iron in biliary colic, 300
use of sarsaparilla, 320-1
Cascara:
for chronic constipation, pros and cons of, 94, best form of, 94

Digitized by Google

Cascara:
for constipation in sthenic dyspepsia, 52
Cascarine le Prince, a satisfactory form of cascara, 94
Castor-oil:
best way of administering, 73-4
in diarrhœa, 97
Cataphoresis in treatment of gouty joints, 101
Catechu, tincture of, in treatment of gouty diarrhœa, 185
Cauterets, sulphur-water spa, 236
Cerebellar diseases, giddiness associated with, 107
Cerebro-spinal exhaustion, what it means and may lead to, 142
Certificates (medical) for committal of private lunatics to asylums, 335 *et seq.*, care necessary in filling in, 337 *et seq.*
Cerumen in the ear:
a cause of cough, 12
of giddiness, 107
Champagne in treatment of vomiting, 105
Change of air or climate, *see also* Bracing *and* Sedative climates:
bibliography, 240
choice of climate, 205 *et seq.*
conditions governing, 206 *et seq.*
headache induced by, 148
treatment for, 148
important factors in, 206
drainage, 208-9
elevation, 206-7
exposure, 206
humidity, 209, 212-14
rainfall, 209, 211-12
subsoil, 206-7
sunshine, 206, 209-11
temperature, 209, 215-16
water-supply, 208, 209
places suitable for—
in chronic cough, 16
after influenza, 21-2
Change of air or climate:
therapeutic measures in conjunction with spa treatment, etc., 225 *et seq.*
Charcoal in relief of flatulence, 64
Cheltenham, sedative climate of, 217
Chest, pain through, in asthenic dyspepsia, 56
Chilblains:
arsenic (internally) used for, 307, preferably treated by calcium chloride internally and local measures, 307, 317
tendency to, useful drugs, etc., to check, 308
Children:
chronic constipation in:
night terrors occasioned by, and their proper treatment, 83
senna disguised in prunes for, 89
spa treatment specially suited to, 86
diarrhœa in, 95
digitalis well tolerated by, 287
dosage of calomel for, how to determine, Murray cited on, 302
hot wet pack useful for and enjoyed by, 177
joint troubles in, often misdiagnosed, 181-2
lienteric diarrhœa in, value of arsenic for, 303
nocturnal enuresis in, 308, benefited at Contrexéville, 232
overclothing and coddling of, evil results of, 245
suffering from malnutrition benefited by bracing climate, 218
and young people with compensated mitral regurgitation and other forms of heart disease benefiting at Bourbon-Lancy, 240

Digitized by Google

Children's drug, the, *see* Belladonna
Chill:
not always the cause of bronchitis, 182
on the liver, what it really is, 31
theory, the, untruth of, 251
demonstrated by open-air treatment of phthisis, 252-3
'Chills' a symptom, not a cause, of colds, etc., 2, 3
in relation to tonsillitis, 26
Chittenden, Dr., *cited* on over-abundance of proteids in diet in general health, 254 *and note*, 255
Chloral for high arterial tension, obvious drawbacks to, 201
Chlorate of potassium in treatment of tonsillitis, etc., 28, 29, 30
Chloretone as specific against sea-sickness, 104
Chloride of ammonium and tr. cimicifug. in relief of vague neuralgic pains, 135
Chlorine mixture used by Dr. Burney Yeo in typhoid fever, 298
Chloride of calcium:
drugs to disguise the taste of, 317
in chilblains, 307
in chronic morning headache, 152
in pruritus, formula for, 318
uses of, 316 *et seq.*
Chloroform liniment in treatment of myalgia, 123
Chlorosis, the headache of, its cause, 149
Chlorotic girls benefiting at St. Moritz, 235
patients intolerant of the stronger preparations of iron, 303
Cholagogue cathartics in gout deprecated, 169
Chorea:
arsenic in, Murray cited on, 304, 305, author's views, 305-6
diet and rest in bed essential when under arsenic treatment, 306
hiccough sometimes occurring in, 66
in relation to true rheumatism, 113
trional as a substitute for arsenic in, 306-7
Chronic constipation and other chronic complaints, *see under* names of complaints
invalidism, equable temperatures desirable for, 215
wasting diseases, value of sarsaparilla in, 320
Churches, impurity of air in, 249
Ciliary muscle, 138
fatigue of, often unrecognised, 139
Cimicifug. (tr.), *see* Chloride of ammonium and
Circulation in relation to giddiness, 108-9
Circulatory disturbances induced by over-eating, consequences of, 264-5
Cirrhosis, causes of, 178
Citrate of iron, with arsenic and ammonia as a digestive tonic, 303, formula for, 304
of lithium, in poultices, etc., in treatment of gouty joints, 101
of potassium in combination as diuretic in treatment of gout, 171, formula for, 172
of soda in milk during rest cure, value of, 320
Citric acid and the citrates (*see also* Lemon-juice), uses of, 318 *et seq.*
Civilization in relation to general health, 241 *et seq.*

Digitized by Google

Climate (*see also* Change of air):
as affecting colds, coughs, and sore throats, 2, 15
bracing, 216
instances of, 217
relaxing or (preferably) sedative, 216
instances of, 217
Climatology, the basis of, 205
Clinical examinations, a golden rule for, 27
of the suspected insane, 325
Clothing in relation to general health, 243
effects of, on the skin, 244
flannel, an indictment of, 248
substitutes for, 248
Coddling by clothes, reasons for avoiding, 245-6
Cod-liver oil to check tendency to chilblains, 308
Colchicum in pain of gouty arthritis, 179
in combination in gouty bronchitis, 183
Cold:
measure of, desirable on the skin, 244-5
sudden, a cause of rheumatics, 117-8
common:
iodide of potassium to abort, 280
laryngeal:
treatment to abort:
inhalation by means of atomizers, 7
fluids for use in, oleaginous and aqueous, 7, 8
nasal:
region affected by, 3
treatment to abort:
nasal douche, 4
fluids for use in, 5
nasal and laryngeal:
treatment to abort:
bed, hot bath, purgative, and hot wet pack, 8
Cold, common nasal and laryngeal—treatment to abort:
gargling and nasal douching, 4
fluids for use in, 5
treatment to cure during congestive period:
expectorants, how to employ, 9
a valuable form of, 10, when contra-indicated, 10, 11
treatment during and after:
drugs employed in, 8, 9
infectious nature of, 3
feveriah:
causes of, 32, 115
recurrence of, how occasioned, 32
symptoms of, how distinguished from influenza, etc., 31, importance of so distinguishing, 31-2
treatment for, early and after:
hot wet pack, purgative, and drug, 31, 32
various names given to, 31
Colds, coughs, and sore throats:
causes of, 1
errors regarding, 1-3
Colic:
biliary, benefiting at Carlsbad, 226
value of succinate of iron in, Carter *cited* on, 300
hepatic, benefiting at Evian, 234
renal, benefiting at Contrexéville, 232, and at Evian, 234

Digitized by Google

Colic, renal:
value of belladonna in, in large doses, Murray *cited* on, 310
and constipation, etc., formulæ for, 109, 110
Colon, the:
displacement of sometimes due to chronic constipation, 84
transverse:
irritation of, a cause of sthenic dyspepsia, how to relieve, 54
Common cold, *see under* Cold
Common salt:
elimination of, from diet of epileptics (under bromide treatment), 284, of gouty persons, 92, 161-3, of sthenic dyspeptics, 52
Complexion, the, as affected by chronic constipation, 83
Compresses:
in fibrositis, 120
in gouty joints, 180-1
Concert-rooms, impurity of air in, 249
Congestive headache, better described as mechanical, 147
Conjunctivitis, gouty, and its treatment, 185
Constipation:
associated with sthenic dyspepsia, means of relieving, formulæ for, 52
a cause of adolescent insanity in girls, 330
causes of, 188, 191
defined, 70, 72
in relation to dyspepsias, 43
(1) sthenic, means of relieving, 52
(2) asthenic, means of relieving, 58
chronic (or habitual), 73
age in relation to prospect of cure, 91, 93, 308
a cause of gastric cough, 17
Constipation, chronic:
causes, contributory, 77, 80
essential in, 80-1
diet in relation to, 79
eminently a curable trouble, 76-7, 91
inadequate peristalsis in, 80, 81
morbid consequences of, especially mental troubles, 329
symptoms of:
obscurity of, ignorance of the patient as to, 82
usual and occasional, 82 *et seq.*
toxic effect of, 77, 82
treatment of:
irrational, purgatives and habitual use of enemata, 81
protracted, of necessity, 84-5
various forms of, 85 *et seq.*
spa treatment and its great advantages, 85, wisdom of utilizing for children, 86; principles of, applied to home treatment, 86, prescriptions for, 87-9
women the chief sufferers from, 77
why so, 78
and other forms of:
formulæ for, 109, 110, 111
occasional, some consequences of, three main remedies for, 73-4, dietary additions of service against, 79-80

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Contrexéville:
cases suited for, 231 *et seq.*
diuretic character of its waters, 178
value of, in high arterial tension of gouty origin, 199
Convalescence in those of sound constitution, aided by bracing climate, 218
Cooper, Sir Astley, *cited* on the employment of new remedies, 273
Coronary arteries:
as affected by high arterial tension, 202
effect on, of iodide of potassium, 279
Corvisart, opium prescribed by, in influenza, 20
Coryza:
produced by small doses of iodide of potassium rather than large, 166
in sthenic dyspepsia, 51
Cough, unrelated:
causes of:
cerumen in the ear, 12
chronic irritation of larynx or trachea, how caused, and how aggravated, symptoms of, 15, sometimes mistaken for whooping-cough, 15, 16
treatment for, by change of air and rest, 16
by lozenges, 16, 17
gastric, hepatic, and intestinal derangements, location of cause, and symptoms of and treatment for, 17, the alcoholic type of, 17, 18
nasal or post-nasal obstruction, 12
means of removing
Cough, unrelated, causes of—
nasal or post-nasal obstruction, 12:
—warning against eagerness to operate, 13
relaxed uvula, 13
treatment for, by gargle and painting, 13, 14
also œdematous treatment for, by scarifying, 14
risks of complications with, 14
treatment for, cathartic and operative, 15
Cough lozenges, useful:
krameria, 16
menthol, etc., 36
Cough mixtures (to allay tickling cough), formulæ for, 36
Cramp and numbness of extremities an indication of arterio-sclerosis, 190
Cranial neuralgia, *see* Facial and Cranial
Creosote in lime-water for vomiting, 105
Crookshank, Dr. Graham, *cited* on the organs to be heeded in diagnosing neurosis, neurasthenia, or borderland insanity, 328, 329

DAMP one of the causes of rheumatics, 117
Davos, bracing climate of, 217
Deafness, premature, how to retard the cause of, 247
Decalcification, property of, possessed by citric acid, 318
application of, to milk, to prevent curdling, 319-20
to mitral stenosis, 319
Defæcation, daily regularity of, not a security against existence of chronic constipation, 82

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Defæcation, delayed, a cause of constipation, 78
infrequent, not necessarily indicative of constipation, 70-1
position during, the best indicated, 78-9
Delirium sometimes mistaken for acute mania, 330
Delirium tremens, calomel in, large dose essential, 298
Deltoid myalgia, features of, 122-3
Depression, causes of, 183
after influenza, how best combated, 21
Dermatological therapeutics:
mercury and its salts the sheet-anchor of, 300
Diabetes:
arsenic in, Murray *cited* on, 304-5
benefited at Carlsbad and Marienbad, 227
excess of output of fluid in, 80
hiccough frequent in, 66
Diagnostic points to heed in (especially)—
arterio-sclerosis, however caused, 189 *et seq.*
giddiness, 109
lumbago, 124
sciatica (alleged), 126-7
suspected insanity, 325
vomiting, 100, 101
Diaphragm, the, persistent, obtrusive, futile cough usually caused below, 17
Diarrhœa, adult and infantile:
causes of, 73, 95, 97, 99, 185
formulæ for, 111
lienteric, in children, value of arsenic in, 303
in neurotic and neurasthenic persons, its cause and cure, 95, 96
sometimes salutary, treatment of, 96
treatment of various forms of, 96 *et seq.*
Diet in relation to (especially)—
diarrhœa, 98
general health, 255-66
gouty high arterial tension, 198-9
headaches due to gastro-intestinal toxins, 150
influenza, 21
migraine, 146
Dietetic errors rather from excess than deficiency in consumption, 257
Digitalis:
danger of, in treatment of high arterial tension, 203-4
as a diuretic, unsuited to treatment of gout, 170
as a heart tonic, 151
preliminaries to treatment with, 288-9
uses of, 285
errors in employment of, 284-8
how best administered, 288-90
true sphere of, 290-1
author's formula for, 294
unreliability of preparations of, 291-3
with bromide in nocturnal epilepsy, 284
with iodide of potassium in forms of heart trouble, 280
Digitaline, crystallized, notes on, 293
Digestion, *see also* Dyspepsia:
gastric, process of, 38, relative importance of HCl and pepsin, 38, 39 *et seq.*
pancreatic, HCl essential to, 39
Digestive discomfort, period of onset of, in sthenic and asthenic dyspepsia, 44
disorders, in sthenic type of patient, spas at which benefited, 226, 229
disturbances and giddiness, 108
undefined, caused by loaded rectum, 73

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Digestive tonic, value of arsenic in combination with iron for, 303, formula for, 304
Dinner pills, formulæ for, 94
Diphtheria:
diagnosis of—
difficulty of, 42
two aids to, 43
sequelæ of, paralysis, etc., 22
Diseases:
associated with spirit-drinking, 262
persons suffering from, usually requiring sedative climate, 219, 220 *et seq.*
Disinclination for work associated with arterio-sclerosis, 190
Diuretic mineral waters, 173
Diuretics:
in gout, 190 *et seq.*
in relief of headache of gastro-intestinal origin, 150
Diuretin, a form of theobromine, 15
views of Professor Huchard on, 173
Dobell's solution as a nasal douche, 6
Dr Woakes' irrigator, a nasal douche, 4 *note*
Dosage (*see each* Drug) of children with calomel, how to determine, Murray *cited* on, 302
with natural mineral waters, principle of (little and often), 87
Douches, *see also* Nasal douches:
in chronic renal disease, 221
Dover's powder in lumbago, 125
Dowsing Institutes for radiant-heat baths, 176
Drainage, bad, a cause of tonsillitis, 26
Draughts:
as causes of rheumatics, 118
inseparable from fresh air, 251-2
Drinking:
the best time for, in relation to meals, 261-4
Drinking of water with closed nostrils and ears, in relief of hiccough, 67
Drug habits induced by eye-strain, 138
Drugs:
combinable with iodide of potassium in various forms, 282-3
new, employment of, Sir Astley Cooper *cited* on, 273
Some, and their Uses, 273 *et seq.*
stimulating skin action, 174
for treatment of high arterial tension, objections to many, 201
Duodenum, objection of, to receive over-acid food-masses, 40
Dysmenorrhœa:
value of belladonna in, combined with aloes, formula for, 309
Dyspepsia (*see also* Digestion):
causes of, 138, 264, 265
the principal — undue retention of food in the stomach, 40
functional:
causes of, 37
persons usually suffering from, 37
types of suffering from the two main classes of, 43-4
classification:
two classes of, 37
sthenic and asthenic, 38, both sometimes due to gout, 185; how to differentiate, 43, 53; symptoms common to both, 41, 55; treatment beneficial to both, 41, 42, 45-6

Digitized by Google

Dyspepsia, functional—classification:
(1) sthenic:
false angina caused by, 59, symptoms of, 59-60, treatment for, 50-3
ideal case of, its symptoms and treatment, 46 *et seq.*
mineral water suited for constipation in, 92
type of patient and nature of symptoms, 43-4; symptoms only occurring with, 44-5; troubles aggravated if treated in error as asthenic, 54
(2) asthenic:
a cause of gastric asthma, 277, treatment of the latter, interim and actual, 277, dangers ahead of, 63
type of patient and nature of symptoms, 43-4; uninjured by treatment suited to sthenic, 54
typical case of, its symptoms and treatment, 55
intestinal, common in the gouty, 185, symptoms of, 185, treatment for, 185-6
structural, causes of:
adhesions, operative treatment essential in, 59
Dyspepsia of substantially healthy persons, as divided by Sir W. Roberts:
atonic form, 54, 55
irritative or acid, 54
author's comment, 55
night-terrors of children caused by, 83
Dyspnœa (*see also* Breathlessness), causes of, two kinds of, 191-2, an indication of high arterial tension, 191, 197, pre-sclerosis suggested by presence of, 191, 194, 197
a symptom of chronic constipation, 82

Early morning symptoms of sthenic dyspepsia, 46, 50, 59, 60
Ears (*see also* Aural):
abnormalities in or near, and hardened wax in, causes of giddiness, 107, of cough, 12
value of friction to, after bath, 247
Eaux Bonnes, sulphur-water spa, cases benefiting at, 237
Eaux Chaudes, sulphur-water spa, cases benefiting at, 237
Eczema:
of gouty origin, 183
treatment for, 184
specially of the head—
hydrarg. ammon. in, formula for, 301
Eczematous and other irritating eruptions:
bismuth ointment, formulæ for, 314, 315
Electricity:
to induce adequate peristalsis, 89
in treatment of—
gouty joints, 180, 181
myalgia, 124
Elevation, importance of, in change of air, 206
Emaciation of those suffering from chronic constipation, 83

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Emphysema of the lungs:
benefiting at Eaux Bonnes, 237
sedative climate good for, 223-4
value of iodide of potassium in, relief of, 276
Endocarditis induced by tonsillitis, 25
rheumatic, *see that head*
Enema:
habitual use of deprecated, 81
Kussmaul's oil enema method, a hint concerning, 91
soap-and-water, use of an antiseptic with, 75
practical points in the giving of, 75-6, 91
England and Wales, average rainfall for, 211
Enuresis, nocturnal, in children, 308
benefited at Contrexéville, 232
Epigastrium:
state of, in sthenic and asthenic dyspepsia, 44
in the former, uncomfortable after food, 46
stimulation of, to relieve hiccough, various means of, 67
or soothing of, in treatment of vomiting, 105
Epilepsy, *see also* Petit-mal:
giddiness in, its cause, 108
hiccough sometimes met with in, 66
instability of nerve-centres in, 145
sedative climate best for, 223
value of bromide of potassium in, 283
how enhanced, 284
Epileptic seizure sometimes due to loaded rectum, 73
Epileptiform attacks, causes of, 183
Erect and recumbent positions, ratio of normal pulsations in, modification of, in high arterial tension, 195-6, 198
Ergot with arsenic in treatment of chorea, Smith *cited* on, 306
form of, useful relief in of hiccough, 67
Eructations a symptom of sthenic dyspepsia, 46, terebene in relief of, 64-5
Erythema:
ameliorated by use of chloride of calcium, 317
value of quinine in, 317
of gouty origin, 183
Erythrol tetranitrate in treatment of high arterial tension, 201
Ether inhaled by the mouth, in relief of hiccough, 67
Eugénie, Empress of the French, and St. Sauveur waters, 237
Euonymin in liver treatment, in gouty conditions, 169
Evian:
cases likely to do well at, 231, 233 *et seq.*
climatic conditions at, 233
equipment of, 233
waters:
composition of, 233
diuretic properties of, 173
in high arterial tension of gouty origin, 199
in treatment of asthenic dyspepsia with anginal attacks, 62
Excretion (*see also* Defæcation) facilitated by liberal supply of fluids, 168
Exercise:
of the abdominal muscles, 267-8
a simple series for, 268-9
other forms, 270
regular open-air, in the treatment of sthenic dyspepsia, 47
in relation to general health, 266-70

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Exophthalmic goitre :
falling of the hair a symptom of 301
value of belladonna in, 309, in combination with arsenic and iodide of potassium, 310, other treatment for, 310, serious results of the complaint if unchecked, 310
Expectorants, two classes of, 9
soothing, when applicable, 10, a valuable form of, 10, when contra-indicated, 10, 11
stimulating, when applicable, 11, a useful form of, 11
Exposure, or aspect, importance of, in change of air, 206
Eyes, points concerning, to note in clinical examination for insanity, 325-6, 328
Eye affections of gouty origin, and their treatment, 185
Eyesight, good, compatible with eyestrain, and the reason, 138-9
Eyestrain :
a cause of headache and of neuralgia, other ailments, frequently due to 103, 138
examination for, various methods indicated, 142
how induced, more by slight than by gross defects or refractive errors, 138, 145
manifestations of, 138-40, some indefinite forms of, 141-2
symptoms of, 140 *et seq.*

Facial asymmetry to be looked for in clinical examination for insanity, 325
muscles, tests of in relation to insanity, 326
or cranial neuralgias :
external treatment for, 135
internal remedies for, 135
Fæcal masses in chronic constipation, consistence and appearance of when voided, 84
error often made concerning, 84
frequent location of, 84
Fæces defined, 70, 71-2, 79
Fagge cited on chronic rheumatism, 113
False angina resulting from sthenic dyspepsia, symptoms of, 59, 60, treatment for, 60-3
Fashion in spas, 228
Fat caused by excess of quality in feeding, 72
Fats in anæmic neuralgia, 130
digestion of, 39
Febricula, *see* Feverish cold, *under* Colds
Fermentation theory, the, 56 *note*, 64
Ferris and Co.'s Syr. pectoralis rub., an agreeable cough-mixture, 36
Feverish cold, *see under* Colds, etc.
Fibrositis, *see also* Neuralgic fibrositis :
so named by Gowers, what it is, 116 *note*
a cause of neuralgia, 128
in the joints, 118
choice of location and persistency in, 119
pain of, 119
symptoms never found with, 119
treatment of :
local, 120
medicinal, 119
movement and rest in, 120-1
spa, 121
treatment of, essential and additional, 118
Figs, prunes, etc., in relation to constipation, 79
Finger, the, use of in detecting state of tension in pulse, 192-3, 194

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Flannel underwear, an indictment of, 47, substitutes for, 248
Flatulence:
in association with menstrual pain, value of belladonna in, 309
formulæ for mixtures for relief of, 68, 69
increased by bicarbonate of soda, 47
a symptom of chronic constipation, 82
symptom of dyspepsia, 41, 56, of sthenic dyspepsia, 46, 60
the two kinds of, 64, causes of, 64, and remedies for, 63-5
Fluid, gastro-intestinal:
deficiency of, a chief factor in chronic constipation, 80
increase of, due to action of sulphate of magnesium, 85
Fluids, insufficient consumption of, a cause contributory of chronic constipation, 78
plentiful supply of, essential to adequate excretory action, 163-4, 170, an exception to the rule, 171
quantity of, desirable in high arterial tension, 199
for use as—
cough mixtures, 36
expectorants, soothing, 10, stimulating, 11
gargles, 5, 6, 35-6
in nasal douches, 5, 6, 34-5
Fog, causes of, why injurious in London, etc., 214
Fomentations (*see also* Hot fomentations for boils, to render aseptic), 33
Food, *see also* Meat:
effect of, in sthenic and asthenic dyspepsia, 44
mastication of, importance of, in sthenic dyspepsia, 47
nitrogenous forms of, bad for gouty persons, 160-1
Food, proximate principles of, effect on the digestion of, of insufficient HCl, 39
undue retention of, in the stomach, the *causa causans* of functional dyspepsia, 40, symptoms occasioned by, 41, treatment for, 41, 42
Foreign health resorts, sedative climates at, 217
Forms of disease and ill-health suited to bracing climates, 218
Formalin and its uses, 315
two forms of, for internal use, 315
Formulæ (of various drugs) for use in various complaints, *see under* Drugs *and* Complaints
Fothergill *cited* on the sedative action of buchu, 170
Fowler's solution:
in chorea, Murray *cited* on, 305, author's views, 305-6
as a digestive tonic, 303
with bromide of potassium, uses of, 284
Functional diseases:
hiccough common in, 66
nervous, sedative climates best for, 223, 224
Functional dyspepsia, *see under* Dyspepsia
Furunculosis (*see also* Boils) due to gout, 183

GARGLES, fluids for use in, formulæ for, 5, 6, 35-6
Gastric digestion, *see under* Digestion
dilatation one cause of, 59
a cause of cough, 17
false angina, 59
disorders in asthenic type of patient, spas suited to, 227
flatulence, 64, remedies for, 64-5
juice, component parts of, their relative importance, 38 *et seq.*

Digitized by Google

Gastric juice, secretion of:
(*a*) normal, 40 *note*
(*b*) abnormal, either excessive or prolonged, 40, consequences of the latter, 40
source of the muriatic acid in, deduction from, 52
mucosa, irritable state of, the provoking cause of both forms of dyspepsia, 55
Gastric, hepatic, and intestinal derangements as causes of coughs, 17
Gastro-intestinal region:
connection of, with the cause of rheumatics, 116, 118
toxæmia, a frequent cause of recurrent febrile attacks, 32
toxins chief causes of headache, 150, treatment to combat, 150-1
Gelsemine and butyl-chloral pills for facial and cranial neuralgia, 135
Gelsemium in combination with quinine in anæmic neuralgia, 131, and gouty ditto, 133
General debility, slight, benefited by bracing climate, 218
General health—
equivalent to general physiological efficiency, 241
adequate supply of oxygen, a main factor in, 249 *et seq.*
in relation to—
baths, daily, matutinal, or other, 270-1
clothing, 243-9
diet, 254-66
exercise, 266-70
physiology modified by civilization, 241 *et seq.*
work, 242
Genitals (*see also* Reproductive organs)
Genitals, herpes of, recurrent, arsenic a specific for, 307
obtrusive sensations in, symptomatic of chronic constipation, 82
Giddiness:
causes of, associations of, with aural vertigo, 107
cerebellar diseases, 107
chronic constipation, 82
eyestrain, 140-1
vaso-motor disturbances, 108, 109
Girbola, the, 270 *and note*
Glandular swelling, reduction of, by means of iodide of potassium, 280
Glottis, the, œdema of, indications of, and treatment for, 14, 15
Glycerine in combination with formalin, value of, 315
and acid, for allaying chronic cough, 16
of tannin, painting with, of relaxed uvula, 14
Glyco-Thymoline as a nasal douche, 5
Golf as an exercise for all ages and both sexes, 267
shoulder, or tennis elbow, and their cause, 117
Goodhart, Dr., *cited* on pelvic pains, 134
Gout:
in relation to age, habits and sex, 158
causation of, 156, 158, 167, 169, 186
diet in relation to, 158-63
elimination of waste food-products important in, 163
fluids to be liberally imbibed in, 163-4, 170
how and when to be imbibed, 164-5, 171

Digitized by Google

Gout, fluids to be imbibed in :
et seq., the exception to the rule, 171
forms of, excluded from consideration in this work, 155
hiccough, frequency of in, 66
kidney action in, importance of, how stimulated, 169 *et seq.*
manifestations of, 156-7, 178 *et seq.*
painful forms of, less dangerous than the painless, 157
poison of, a cause of arterio-sclerosis, 177, 188, 189
skin action in, importance of, how stimulated, 174 *et seq.*
slighter forms benefited by bracing climate, 219
to be taken into account in every diagnosis, 157
treatment of, by—
baths, 175-6
diet, 158-63
drugs, 165 *et seq.*
exercise, 174
hot wet pack, 176-7
massage, 175
water drinking, 163-5
the two principles of, 158-9
abarticular, the many forms of, and their treatment, 182-3
chronic deforming, often mistaken for chronic rheumatism, 179
retrocedent, benefiting at Luchon, 237
and kidney disease, relation between and with arterio-sclerosis, 186-8 *et seq.*
or rheumatism, in relation to relaxed uvula, 14
'Goutiness,' as employed by the author, 155
benefiting at Evian, 234
in relation to feverish cold, 31, 32
renal inadequacy associated with, 231
'Goutiness,' state of blood in, a cause of neuralgia (*see also* Chap. V.) diagnostic points to heed and drugs to employ, 131-2
Gouty dyspepsia described, 63
nephritis, hiccough frequent in, 66
patients benefiting at Evian, 233
giddiness in, what due to, 108
Gowers, Sir William, namer of fibrositis, 116 *and note*
Graves, Dr., observation by, on pulsations in the erect and recumbent positions, 195
Graves' disease :
belladonna in, 309, combined with arsenic, 310
diarrhœa an early symptom in, 98-9
hiccough a complication in, 66
Gray powder, formulæ for, and uses of, 295, 299
Great Britain :
bracing health resorts in, 217
sedative climates in, 217
suited to chronic kidney cases, 222
Guaiacol, carbonate of, with iodide of potassium in treatment of rheumatoid arthritis, Luff *cited* on, 281
Guaiacum alone and in combination in :
fibrositis, 119
gout, 166
tonsillitis, 29, and other forms of sore throat, 29
note on adding to bismuth in sthenic dyspepsia, 48

Hæmorrhages, value of chloride of calcium in checking or preventing, 317
Hæmorrhoids caused by loaded rectum, 73
Haig, Dr., *cited* on the best diet for general health, 854 *and note* 255

Digitized by Google

Hair, falling of (*see also* Baldness):
a symptom of exophthalmic goitre and of myxœdema, 301
other conditions of which it is symptomatic, and the treatment, 302
in women, value of mercurial salts in arresting, formula for, 301
lack of adequate stimulation to, a cause of baldness, 246-7
Hare, Dr., *cited* on carbohydrates in diet in general health, 254 *and note*, 255, 258
Harrogate, sulphur-water spa, 236
for fibrositis, summer treatment of, 121
for gouty arthritis, 180 *note*
Nauheim treatment provided at, 239
Head, eczema of, value of hydrarg. ammon. in, formula for, 301
Headaches (*see* Bilious *and* Sick headache), 137
associated with arterio-sclerosis, 190-1
causes of, eyestrain a principal one, 138, 144 *et seq.*, location of irritation to cause, 149-50
various forms of—
chronic or persistent, causes of and treatment for, 152
frontal, usual causes of, 150
mechanical, 147
migraine, or hemicrania, 144
phenomena of, 145-6
treatment for, 146-7
vertical, usual causes of, 150
Heart, the:
as affected by sthenic dyspepsia, 59 *et seq.*
Heart, the:
apex beat displaced in high arterial tension, 202-3
careful examination of, in cases of mechanical headache, 147
condition of—
in which digitalis is suitable, 290 *et seq.*
in which it is unsuitable, 284-90
in which iodide of potassium is of use, 278-9, others calling for addition of digitalis, 280
examination of, for signs of arterio-sclerosis in gouty persons with kidney disease, points to be noted, 196
for evidence of renal trouble, 101
mitral stenosis of, *see* Blood, fluidity of—
pre-sclerosis more dangerous to, than to kidneys, 202
Heart disease(s), 221
best spa climate for, Bath suited to, in England, 223
forms of, benefiting at Bourbon-Lancy, 239-40, by Nauheim treatment, 237, Broadbent's estimation of the value of such treatment, 238
high altitudes unsuited for, 222
sufferers from, bad travellers, 239
value of mercury in, Murray *cited* on, 297
valvular, a contra-indication for ipecacuanha and antimony expectorant, 10, 11
sometimes due to tonsillitis, 25
Heartburn a symptom of sthenic dyspepsia, 44, 46, 50

Digitized by Google

Heat, radiant, in prevention and treatment of chilblains, 308
Heat and cold, sudden alternations of, a chief cause of chilblains, 307
Helmitol, uses of, 315, 316
Hemicrania, *see* Migraine
Hepatic disease, hiccough a symptom in, 66
disorders in sthenic type of patient, spas suited to, 226-7
Hernia a cause of vomiting, 101
Heroin in mixtures for allaying chronic cough, 17
Herpes of lips and genitals, recurrent arsenic as a specific in, Hutchinson *cited* on, 307
Hiccough a symptom of sthenic dyspepsia, 46, 50
causes of, 65-6
treatment of, pending cure of cause, 63, 65, 66 *et seq.*
High altitude, benefit of, in anæmia, 234, a warning, 235
unsuited to heart disease, 222
Holding of the breath in relief of hiccough, 67
Holmes, Oliver Wendell, *cited* on the injury done by having a nerve tapped, 141
Homburg:
cases likely to do well at, 229-30
compared with Brides-les-Bains, 229
Hot air, *see* Radiant heat
baths, *see* Baths
Hot douche, in treatment of fibrositis, 120
Hot fomentations (*see also* Fomentations) in treatment of fibrositis, 120, and of gouty affections of the eye, 185
Hot wet pack in colds, etc., 8 *and note*, 11, in dyspepsias, 43, in fibrositis, 118, in gout, how applied, 176-7
Huchard, Professor, *cited* on
digitalis as the sole cardiac medicine, 290
form of, used by, 293
iodide of sodium as preferable to iodide of potassium, 283
theobromine as a diuretic, 172-3
method of, for determining pulse tension, 195-6
Humidity in relation to change of air, 209, 212-14
Hunger confused with symptoms of dyspepsia, 46
Hutchinson, Jonathan, *cited* on the use of arsenic in herpes, 307
Hydrarg. ammon. in eczema of the head, formula for, 301
Hydrarg. cum creta in—
nursery use, 295
formula for, 299
Hydrarg. perchlor. for arresting falling of hair, formula for, 301
Hydrobromic acid in aural vertigo and noises in the head, 108
with liq. trinitrini in relief of headache due to vaso-motor constriction, 151-2
Hydrocephalus, hiccough excited by, 66
Hydrochloric acid:
in relation to dyspepsia, sthenic and asthenic, 45, 57, 58
in gastric digestion, effects of—
(*a*) insufficiency of, 38-9
(*b*) excess of, 40
importance of, 38 *et seq.*
and strychnine, in attacks of gastric asthma, 277
arsenic valuable in connection with the above, 277-8, formula for, 278
Hydrocyanic acid in treatment of vomiting, 105, 106
Hyperæmia of the eyelid, causes of, 143

Digitized by Google

Hyperidrosis of the feet, belladonna liniment for, 311
Hyperopia, indications of, 183
Hypnotics, formulæ for, 153
Hysteria, excess of output of fluid in, 80
hiccough common in, 66
in relation to neuralgia, 132
sedative climate best for, 223
Hysterical ebullitions:
induced by cerebro-spinal exhaustion, 142
sometimes due to loaded rectum, 73

Ichthyol and its uses, 312-3
in treatment of the discomforts of the menopause, 224
ointment in treatment of boils, 184
Idleness in relation to nervous complaints, 243
Ilkley, bracing climate of, 217
Indigestion, *see* Dyspepsias
Infants, colic of, and diarrhœa of, formulæ for, 110, 111
Infectiousness of colds, etc., 3
Influenza:
danger of, if neglected, 18
depression after, diet and drugs for, 21
name often misapplied, 19
neuralgia of, morphia to relieve, 137
opium almost specific in, 8
prostration after, 32
symptoms of the real, 19, 20
treatment at onset, after acute stage, and diet in convalescence, 21, 22
Infusion sometimes preferable to tincture in digitalis, 292
Insanity:
a symptom, not a disease, 322, advantage of approaching cases as if of physical derangement, 324, 331, wrong attitude towards, 323-4
Insanity:
'borderland,' diagnosis of, points to heed, Crookshank on, 328-329
clinical examination in, routine for, 325, how best approached, 338-9, notes to be made and kept, 338
physical and physiological causes of, 322, instances of, 326 *et seq.*
ruses in approaching a patient condemned, 331
treatment:
procedure in regard to—
(*a*) pauper patients, 333
(*b*) private patients, 333
treatment of, asylum or home, 331, pros and cons of, 332, 333, cases fitted for home treatment, Jones *cited* on, 332-3, cases fitted for asylum treatment, procedure in regard to, 333 (1) urgency orders, 334, (2) medical certificates, 335-7
security afforded by law to the doctor, 336
Insomnia:
due to gouty affections of the nerves, 183
an indirect symptom of dyspepsia, 41
sedative climate best for, 223
Intemperance induced by eye-strain, its results, 138, 142
Intestinal causes of insanity, 329
flatulence, 64
remedies for, 65
irritation the cause of diarrhœa, 95, 97
possible consequences of, 99
treatment for, 97 *et seq.*
stimulation in cure of chronic constipation, aim of, and method for, 90

Digitized by Google

Intolerance of iodide of potassium, how manifested, 281-3
Intracranial disease, association of vomiting with, 100
as a cause of headache, 146
Iodide of potassium and its uses, 274-8, inconveniences and risks associated with, 281, best way of administering, 282-3
in aneurism, 276
in all asthmas, 183
in gout, 165, dosage with, 165-6, as a diuretic, 171, formula for, 172
in gouty neuralgia, 132
in high arterial tension, 202
in combination:
in fibrositis, 119, 128
in gouty bronchitis, 182-3
Iodide of sodium, Huchard's preference of, to iodide of potassium, 283
Iodide and bromide of potassium in treatment of headache from bracing climate, 148
Iodine liniment in treatment of myalgia, 123
Iodism:
some forms of, 281-3
in relation to dosage, 283
Ipecacuanha (vin. ipecac.), action of, on the heart, 10
in vomiting, 105-6
Iridin in liver treatment in gouty conditions, 169
Iritis, gouty, treatment for, 185
Iron:
to check tendency to chilblains, 308
citrate of, with arsenic and ammonia, in anæmia and chlorosis, 303, formula for, 304
form of and combination of, for treatment of anæmic neuralgia, 130, 131
succinate of, in biliary colic, 300
Iron-water spas, the best-known European, 234
Irritability of temper:
associated with chronic constipation, 82
caused by undue secretion of gastric juice, region affected by, 40
an indirect symptom of dyspepsia, 41, specially of the sthenic kind, 46
induced by eyestrain, 138, 142
Irritation of nerves as cause of neuralgia, 129, 133 *et seq.*
Irritative, or acid, form of dyspepsia, 54, 55
Itching due to subcutaneous exudation caused by chloride of calcium, Savill *cited* on, 317

JAMAICA, rainy season in, 212
James's powder in treatment of lumbago, 125
Jaundice, catarrhal, gray powder for, formula for, 299
Jeanne de Navarre (mother of Henry IV.) and Eaux Chaudes, 237
Joint affections (*see also* Arthropathies), due to—
fibrositis, 118-9
gout, 179 *et seq.*
gouty arthritis, 156
subacute, etc., 179, treatment for, 180 *et seq.*
sequential to other complaints than rheumatic fever, 113
Jones, Robert, *cited* on forms of insanity suitable for home treatment, 332-3, and on inadvisability of travel for incipient lunatics, 329
Jordan *cited* on a combination of formalin for stomatitis, etc., 315
Joulie, H., *cited* on the causes of gouty manifestations, 167

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Justices' order for committal of private lunatics to asylums, 333, 341

KHARU fruit, remedy for mild degrees of chronic constipation, 95
Kidney disease (*see also* Renal Disease) not always or solely the cause of high arterial tension in goutiness, 194-5
relation between, and gout, 186 *et seq.*
Kidneys:
action of, specially important in gout, 169
drugs to induce, *see* Diuretics
mineral waters to induce, 173
granular, induced by high arterial tension, 63
movable (right), fæcal mass mistaken for, 84
sometimes found in typical asthenic dyspeptics, 56
œdema of, caused by retention of chlorides, 162
pre-sclerosis less dangerous to, than to the heart, 202
stimulation, means of, 62-3
Killarney, high rainfall at, 211
Kissingen:
cases likely to benefit at, 226, 229
type of invalid to whom suited, 87
Klebs-Loeffler bacillus, action on, of binoxide of mercury, 24
Knee-jerk:
importance of, in diphtheria diagnosis, 23
in relation to insanity, 327, 338
Krameria lozenge, the, its efficacy and the mode of using, 16
Kussmaul's oil enema, advisability of adding antiseptic to, 91

LACTO-VEGETARIANISM: some of its advocates, 254-5, and some of its aims, 258
Languor an indirect symptom of dyspepsia, 41
Laryngeal affections benefiting at Cauterets, 237
or tracheal irritation, as cause of cough, how itself often induced, 15
Laryngitis, chronic, of gouty origin, 182
Laxatives, 86
formulæ for, 87
alternatives for, 89-90
Lead, poison of, a cause of arterio-sclerosis, 188
Leamington, Nauheim treatment provided at, 239
Lee, Dr., *cited* on massage for sciatica, 127
Leeching in relief of neuralgic pains, 137
Lemon-juice, fresh, beneficial in gout, 165, 167-8
Les Avants, bracing climate of, 217
Leukæmia, the headache of, its causes, 149
Lieven, Dr., paper by, on mercury inunction as practised at Aix-la-Chapelle, referred to, 295
Limbs, upper and lower, tests of in suspected insanity, 327, 329
Lime-water in treatment of vomiting, 105
Liniments:
lin. aconite as local application for facial and cranial neuralgia, 135
of belladonna, some uses of, 311
stimulating, in treatment of gouty joints, 180
for treatment of myalgia, 123-4
Linseed and mustard poultice to loins in lumbago, 125
Lips, herpes of, recurrent, arsenic a specific for, 307
Liq. arsenicalis in vomiting, 105-6

Digitized by Google

Liq. arsen. hydrochlor. in asthenic dyspepsia, 57
Liq. ferri mur. in asthenic dyspepsia, 57
Liq. ferri perchlor., bactericidal qualities of, 29
Liq. morph. hydrochlor. valuable in asthenic dyspepsia, 57
Liq. trinitrini in combination with hydrobromic acid in headache due to vasomotor constriction, 151-2
Liquorice with musk in relief of hiccough, 67
Liquorice powder with carbolic acid and powdered althea, pills of, for flatulence, 64
Liver affections benefited at Carlsbad, 226
  chill on, what it really is, 31
  in gouty persons, medicines suited for unloading, 169
  inactivity of, a cause of cough, 17
  induced by eyestrain, 138
Llandrindod wells for fibrositis, summer treatment, 121, for gouty arthritis, 180 *note*
Llangammarch, Nauheim treatment provided at, 239
Llyndulyn, high rainfall at, 211
Local applications for neuralgia, formulæ for, 153
Locomotor ataxy, pains of, relief afforded by acetanilid, 136
London, Nauheim treatment obtainable in, 239
London fog, why injurious, 214
Lotion of bismuth, formula for, 315
Lozenges to be sucked when symptoms appear of sthenic dyspepsia, 51
  useful in coughs, 36
  value of, in chronic cough, 16, warnings as to, 16, 17
Luchon, sulphur-water spa, cases benefiting at, 121, 237
Luff, Dr., *cited* on—
  causes of gout, 181
  iodide of potassium in relief of rheumatoid arthritis, combination employed, 281
  the location of lumbago, 122
  liniment advised by, for use in myalgia, 123-4
Lumbago:
  causes of, 117
  diagnostic points to heed, 124
  diet in, 125
  location of, Luff on, 122
  nature of, 122, 124
  pain of, 124
  treatment for, 125
Lung-invalids, why city fog is injurious to, 214-5

McCall Anderson, Sir Thomas, *cited* on bismuth ointment for eczematous eruptions, formula for, 314
Macleod, Sir George, *cited* on calomel in delirium tremens, 298, on dosage with iodide of potassium, 283
Madeira, island of, sedative climate of, 217, suited to chronic kidney cases, 222
Magnesium:
  salts of, in treatment for night terrors, 83
  sulphate of, how it acts on the intestine, 88, how it should be reinforced to cope with chronic constipation, 88
  value of, in urticaria, 317
Man, primeval, diet of, as compared with the diet of present-day man, 256-7
Mania, acute, relieved by large doses of calomel, Murray *cited* on, 298
Marienbad (cold-water spa), class of patients benefited at, 226-7
Martigny, waters of, similar to those of Carlsbad, 232-3

Digitized by Google

Martin, C. J., *cited* on pulse-testing with the finger, 193
Massage after baths for skin stimulation in gout, 175
in chronic renal disease, 221
in fibrositis, 120-1, 128
in gouty joints, 180
in high arterial tension of gouty origin, 200
in myalgia, 123, 124, 125
in neuralgic fibrositis, the one local remedy to be relied on, 127-8
to increase peristalsis in relief of intestinal flatulence, 65
to induce adequate peristalsis, 89
Mastication of food:
importance of, to gouty persons, 161, in sthenic dyspepsia, 47
in relation to—
diarrhœa prevention, 98
general health, Van Someren *cited* on, 254 *and note*, 255, reasons for its importance and results, 260
Meals:
mid-day and evening, for sufferers from sthenic dyspepsia and anginal attacks, 62
medicines given before, 42, 45, and after, in dyspepsia, effects of, 46, 49
suitable for gouty persons, 160-1
Meat foods:
boiled, less liable to increase arterial tension, 62
desirable in treatment of anæmic neuralgia, 130
less required by civilized than by primeval man, 256-7
Meat foods:
over-eating (*see* Diet), 254-66, causing—
arterio-sclerosis, 188
gout, 158, 160
headaches, 150
high arterial tension, 32, 61
myalgia, 118
rheumatics, 116
tabooed in cases of high arterial tension of gouty origin, 199
unsuited to sedentary persons, 267
Mechanical headache, causes, symptoms, and treatment of, 147-8
Medicines:
given after meals in sthenic dyspepsias, 49, varying length of time in relation to, 50
given before meals, effect of, in dyspepsias, 42, 43
Melancholia:
induced by eyestrain, 138, 142
occasionally resulting from chronic constipation, 83
Ménière's disease (aural vertigo) and its treatment, 107
Meningitis:
as a cause of headache, 147
hiccough excited by, 86
Menopause:
discomforts of, benefited by sedative climate, 224
high arterial tension common at, treatment of, 201
Menstrual period, pains of—
formula for, 153
value of belladonna with aloes in relief of, formula for, 309
Mental causes of cough, *e.g.*, anxiety, overwork, etc., 15
irritability, causes of, 41, 46, 82, 138, 142, 183

Digitized by Google

Mental lethargy, etc., associated with arterio-sclerosis, 190
state of sufferers from sthenic and asthenic dyspepsia, 44, 46
Mercury:
administration of, to a child, Murray's hint on, 302
'alterative' quality of, 295-6
in cardiac complaints, 296-7
safe in treatment of high arterial tension, 202
salts of, calomel (*q.v.*), etc., 297 *et seq.*
uses of, 285
a specific for syphilis, 294-5
inunction method of exhibiting, 295
Metabolism:
increase of, a result of change to bracing climate, 217, 219
defective, causing fibrositis, how produced, 116
perverted, the cause of gout, 156, 158, 186
Meteorology the basis of climatology, 205
Microbes in colds in the post-inflammatory period, 9
Microbic invasion the true cause of colds, coughs, and sore throats, 1
Migraine, 144
causes of, 183
peculiarities of, 144-5
treatment of, 146-7
Milk (cow's) and alternatives for diarrhœa patients, 98
curdling of, prevented by citric acid, 319-20
good for gouty patients with high arterial tension, 199
Milk (human), secretion of, checked by belladonna, 311
Mineral waters, *see* Natural Waters
Mitral stenosis, relief of, by citric acid, 319
Moisture, how eliminated from the system, 80
Morning headache, chronic, Ross cited on, 152
Morphia:
as an antineuralgic, 136, risks attached to, 137
in relation to vomiting, both cause and cure, 106-7
Morphine injection in preliminaries to use of digitalis, 289
Mouth, examination of, in suspected insanity, 326, 329
Mouth-breathing in relation to colds, 4
flatulence, 64
Mouth-temperatures, unreliability of, 30
Movement in treatment of fibrositis, 120
Mucosa, intestinal, sluggish in habitual constipation, drawbacks to slight dietary, stimulation of, 79
Mucus, alkaline, outpouring of, a direct symptom of dyspepsia, 41, one consequence of, 39
Mumps, a form of iodism sometimes mistaken for, 282
Muriatic acid in gastric juice, source of, deduction from, 52
Murray, Dr., *cited* on:
arsenic in diabetes and chorea, 304-6
dosage of children with calomel or gray powder, how to determine, 302
gray powder for catarrhal jaundice, 299-300
value of belladonna in renal colic, 310
value of large dose of calomel in acute mania, 298
value of mercury in heart disease, 297
Muscular action, open-air, as skin stimulant in gout, 174, baths as substitutes for, 175-6

Digitized by Google

Muscular activity, general, not a preventative of constipation, 87
fibrositis, *see* Myalgia
inactivity (abdominal) a cause of chronic constipation in women, 78
Musk and liquorice in relief of hiccough, 67
Mustard plasters in relief of hiccough, 67
Myalgia, 114
pains of, 121
location of, 122
treatment of, 123-5
Myopia, indications of, 143
Myxœdema, falling of the hair a symptom of, 301

Nails of gouty persons, appearance of, 184
Napoleon, Prince, cured of influenza by opium, 20
Nasal douches, irrigators, and sprays, how to use, 4, relative value of, and forms preferable, 33, 34
and laryngeal obstructions as causes of headache, 144, 147
and post-nasal obstruction a cause of cough, 12, treatment for, 13
washes and douches, formulæ for, 5, 6, 33-5, methods of using, 4, 5, 33
Natural mineral waters (*see* Arabella Water):
active ingredient in most, 86
diuretic properties of certain, 173
dosage with, the principle of, 87
imported, used for constipation, inadvisability of using by sthenic dyspeptics, 52, extreme utility of, to asthenic dyspeptics, 58, 62
inadequacy of, in severe chronic constipation, and why, 91-2
Natural mineral waters:
the saline varieties unsuited to gouty persons, 163
Nauheim treatment for cardio-vascular disorders, 237-8, Broadbent's views on the subject, 238
British spas at which it is obtainable, 239
where best made use of, 223
Neboline No. 1 fluid for use in Oppenheimer's vaporizer, 7
Nepenthe in mixtures for allaying cardiac cough, 17
Nephritis, forms of, benefiting at Contrexéville, 232
Nerves, gouty neuritis of, 156
Nerve-tonic, value of arsenic with nux vomica in, 303
Nervous complaints, idleness as a cause of, 243, sedative climates for, when functional, 224
force, leakage of, causing asthenic dyspepsia, 56, conditions causing this leakage, 56
instability, forms of, due to chronic constipation, 77
system, gouty affections of, 183
organic disease of, exciting hiccough, 66
routine for examining in suspected insanity, 325, value of, 328
Neuralgia, 128
and allied pains, formulæ for, 153, 154, *note*
associated with arterio-sclerosis, 190-1
causes of, 129, 131, 132, 133
existence of an irritant, 129
unsatisfactory blood state, *e.g.*, anæmia, 129
treatment of, 129 *et seq.*

Digitized by Google

Neuralgic fibrositis or sciatica, 125
possible causes of, importance of determining, 126
treatment of, 127-8
pains, ill-defined, drugs beneficial in, 135
Neurasthenia (slight):
benefited by bracing climate, 218
a warning, 219-20
diagnosis of, points to heed, 328
eyestrain as causing, 138, 142
headache a common symptom of, 149
Neuritis, causes of, 183
Neurosis, diagnosis of, points to heed, 328
Neurotic condition, so-called, defined, 133
a point to note concerning, 134
(or neurasthenic) person, cause of diarrhœa of, 95-6
treatment for, 96
form of dyspepsia chiefly affecting, 53
symptoms of, 64
Night, pains in, value of iodide of potassium in, 275-6
increase of pain during, a feature in myalgia, 122-3
Night terrors of children, cause and treatment of, 83
Nitre, sweet spirits of, in lumbago, 125
Nitrite of amyl in high arterial tension, 201
Nitro-glycerine in relief of hiccough, 67
Nocturnal enuresis in children benefited at Contrexéville, 232, value of belladonna in, 308
Nodules, subcutaneous, in relation to true rheumatism, 113
Noises in the head, hydrobromic acid as a remedy for, 108
Nozzle, best for enemas, 76
Nux vomica in relief of intestinal flatulence, 65
with arsenic as a nervine tonic, 303
with bromide of potassium, use of, 284
with magnesium sulphate, etc., in mixtures for chronic constipation, 88-9
with the salicylates in treatment of gout, 167, 168
Nystagmus in relation to insanity, 325

Oatmeal, brown bread, etc., in relation to constipation, 79
Obesity, diseases associated with, benefited at Carlsbad, 226
Ocular phenomena associated with migraine, 145
Ocular refractive errors:
a cause of—
giddiness, 107, 140
vomiting and other symptoms, 102-3
in relation to insanity, 325-6
Odour of cutaneous secretions, over-pungency of, indicative of chronic constipation, 83
Oil of cajuput in relief of intestinal flatulence, 65
Oil of eucalyptus, wisdom of adding to soap-and-water enema, 75
Oil of turpentine in relief of hiccough, 67
Ointments, *see also* Unguentum
of bismuth, formulæ for, 314, 315
Old people:
chronic constipation in, belladonna in treatment of, 93-4
deleterious effects on, of bromide of potassium, 283-4
sedative climates good for, 224-5
urinary incontinence in, cantharides in relief of, 311-12
Oliver's (Dr. George) hæmomanometer, 193 *and note*

Digitized by Google

Opium :
in colds, 8
in diarrhœa, 96, 97, 98
in influenza, 8, 20
in lumbago a warning, 125
value of, 274
Oral sepsis in relation to insanity, 326
Ovarian extract in high arterial tension at the menopause, 201
irritation, neuralgia due to, and the best treatment for, 133-4
note of special importance on such cases, 134
Over-eating, *see also* Meat Foods :
causes of, 259-64
consequences of, 264-5
methods of combating, 265 6
habitual, in quality and quantity, consequences of, 71-2
Oxalate of cerium with bismuth in vomiting, 106
Oxygen, adequate supply of, a main factor in securing general health, 249

Pains :
of fibrositis, 119
muscular do., or myalgia, 121-3
general value of iodide of potassium in, 275-6
of gouty arthritis, treatment for, 179
in the head, superficial nature and treatment of, 149
nocturnal, value of iodide of potassium in, 275-6
Pallor, surface, an indication of arterio-sclerosis, 190
Palpitation :
in diagnosis of false angina, 60
forms of, in which digitalis is contraindicated, 286
a symptom of chronic constipation, 82
Palpitation :
a symptom of sthenic dyspepsia, 46, and of asthenic, 56
Pancreas, the functions of, 39
Pancreatic digestion, *see under* Digestion
Paralysis following on diphtheria, 22
strychnine in treatment of, 25
Paroleine (B. W. and Co.) in chronic constipation, 93
Pauper lunatics, procedure for securing removal of, to an institution, 333
Pawlow, researches of, on gastric digestion utilized, 38 *et seq.*
Pebble-sucking, use of (lacking a lozenge), in attacks of sthenic dyspepsia, 51
Pepsin in gastric digestion, less important than HCl, 38-9
strychnine, and HCl in asthenic dyspepsia, 57
Percussion of the heart more important in examination than auscultation, 27
Peristalsis :
diminished or inadequate, a chief factor in chronic constipation, 80, 81
increase of, means of securing, 88-9
need for, in relief of intestinal flatulence, 65
Petit mal (*see also* Epilepsy), value of iodide of potassium in, 280-1
Pfeiffer bacillus, the bacillus of influenza, 19, opium as a specific against, 8, 21
Pharyngitis, chronic, of gouty origin, 182
Pharynx, inflammatory states of, value of chlorate of potassium in, 30
Phenozone and salicylate in treatment of—
gouty neuralgia, 132
migraine, 146
sciatica, 128

Digitized by Google

Phosphoric acid in gout, 167
Phrenic nerve, pressure on, the cause of flatulence, causes of that pressure, 66
Phthisis :
benefiting at Eaux Bonnes, 237
a cause of vomiting, 101
open-air treatment of, what it proves, 252
the slighter forms benefited by bracing climate, 2, 9
tolerance by physicians of impure atmospheres in, 250-1
'Physiological bankruptcy' requiring sedative climate, 220
efficiency promoted and maintained by work, 242-3
Pilocarpine, action of, points to heed, 174
Pneumonia following on influenza, gravity of, 18
Polyuria due to vascular contraction in the kidneys, 191
Podophyllin in treatment of liver in gouty conditions, 169
Potain, use made by, of solid digitalis, 292-3
Potassium iodide (*see also* Iodide of Potassium), and citrate of, for kidney stimulation, 62
salts as diuretics in gout, 170, 171
forms best suited to relieve headache of gastro-intestinal origin, 151
Poultices for boils, to render aseptic, 313
in treatment of gouty joints, 180-1
Pralagnon as 'after-cure' for Brides-les-Bains, 230
Pregnancy, a cause
of chronic constipation, 78
of hiccough, 66
of vomiting, 101
Pre-sclerosis :
the curable stage of arterio-sclerosis, 189
Pre-sclerosis :
curable stage of arterio-sclerosis, how to diagnose, 189-90 *et seq.*
dangerous more to heart than kidney, 202
essential conditions of the state of, 197
Private lunatic patients :
procedure for transfer of, to institutions—
(1) urgency order, 333-5
(2) petition, with statement, medical certificates, and judge's order, 333, notes on certificates, 335 *et seq.*
summary of, 341
security of the certifying doctor under the law, 336
Pro-secretin, as acted on by HCl, 39
Proteids :
digestion of, importance of a due quantity of HCl during, 39
over-consumption of, in relation to physiological efficiency, Chittenden *cited* on, 254, *and note*, 255
Pruritus ani :
calomel as ointment for, 300
cured by chloride of calcium, Savill *cited* on, 317, 318, formula for, *ib.*
Pruritus pudendi :
borax as ointment or lotion for, formula for the latter, 300
cure of, by chloride of calcium, 317, 318
formula for, *ib.*
Psoriasis of gouty origin, 183
Ptosis in relation to insanity, 325
Pulmonary affections benefiting at Eaux Bonnes, 237
gymnastics as means of curing coughs, 13 *and note*
Pulse :
low, with very high temperature, in typhoid, 33

Digitized by Google

Pulse :
points to heed in, in diagnosis of gouty arterio-sclerosis, 192, ways of determining state of tension of, and without instruments, 193 *et seq.*
rapid, bad prognostic omen in typhoid, 33
in sthenic and asthenic dyspepsia, 44
Pulse-beat :
in diagnosis of high arterial tension, 194
indicative of digitalis intoxication, 288
Pulse-rate in diagnosis of high arterial tension, 194
Pulse-tension, determination of, 192, various means of, 193-6
Purgation not always an antiseptic measure, 75
Purgatives :
for colds, etc., 8, 11
in conjunction with arsenic as a digestive tonic, 304
drastic, unwisdom of, in attempted treatment of chronic constipation, 81
for dyspepsia, 43
essential in cure of headaches of gastro-intestinal origin, 150
for gouty persons, 168
to precede use of digitalis, 288, great importance of, 289
previous to treatment with mercury, 296-7
for tonsillitis, 30
Purpura ameliorated by use of chloride of calcium, 317
Pyrenees, sulphur-water spas in, 237
Pyrosis a symptom of sthenic dyspepsia, 44-5, 46, 50, 51

QUININE :
in aural vertigo, 107
combinations of, in anæmic neuralgia, 131, and of gouty neuralgia, 133
Quinine :
in erythema, 317
as tonic after colds, best form of, 8, 9
after influenza, 21
hydrochlorate in treatment of asthenic dyspepsia, 57
and strychnine in headache from relaxing climate, 148
Quinsy :
defined, 25, *note*
as distinct from tonsillitis, 25 *and note*

RADIAL artery, the, 192, tension of, determination of, 192-4
Radiant heat :
baths in gout, 176
to check tendency to chilblains and absorb swellings due to, 308
in fibrositis, 118, 120
Rainfall :
average of England and Wales, 211
in relation to change of air, 209, 211-12
Rainy seasons, 211-2
Rectum :
loaded, conditions directly due to, though cause unsuspected, 73
stricture of, a cause of diarrhœa, 99
Recurrent febrile attacks attributed wrongly to influenza, true nature of, and causes, 32
Relaxing climates, *see* Sedative Climates
Renal cases suited to Contrexéville and Evian treatment, 231 *et seq.*
cirrhosis, value of iodide of potassium in, 276
inadequacy benefiting at Evian, 233, 234
Renal disease :
association of vomiting with, 100

Digitized by Google

Renal disease:
due to gout, 157
need of care in examining urine, 100-1
chronic, benefited by sedative climate, 220
places suited to, 222
value of iodide of potassium in, 275
Rennet, non-action of, on milk treated with citrate of sodium, 319
Reproductive organs, derangements of, a cause of mental instability in women and girls, 330
Reynolds, Sir Russell, *cited* on the aphrodisiac qualities of belladonna, 311
Rheumatic endocarditis, some causes of, 113
fever, 112
sequelæ of, 113
purpura, note on causes and consequences, 282
'Rheumaticky' pains, ill-defined, drugs beneficial in, 135
Rheumatics (*see also* Fibrositis):
causes of, the essential, 114-6
causes of the cause, 116 *et seq.*
the determining, 117
complaints grouped under, 116
parts chiefly affected by, 115, 117
summary of remarks on, 128
Rheumatism, 112
acute, joint troubles following, 113
poison of, cause of arterio-sclerosis, 188
articular, tonsillitis a manifestation of, 25
in children, how manifested, 182
chronic, author's disbelief in, 113, referred to by him as rheumatics (*q.v.*), 114
Rheumatism:
difficulty of differentiating from chronic deforming gout, 179
chronic, the various forms usually grouped as, 114
muscular, the essence of feverish cold, 31
vagueness of the term, 112
Rheumatoid arthritis, value of iodide of potassium in combination of, used by Luff, 281
Riding as an exercise for all ages and both sexes, 267
Ringer cited on:
large doses of belladonna in exophthalmic goitre, 310
value of calomel in pruritus ani, 300
Roberts, Sir William, *cited* on:
bismuth, 47, 51
two divisions of dyspepsias of healthy people—atonic and irritative or acid, 54, author's comment, 55
lozenge recommended by, for use at onset of sthenic dyspepsia, 51
Robson, Mayo, and others, use made by, of chloride of calcium against hæmorrhage, 37
Romberg's test in suspected insanity, 327
Ross, G. W., form of chronic headache described by, cause of and treatment for, 152
Rowing, aiding to develop abdominal muscles, 267
Royat for cure of gouty arthritis, 180, *note*

St. Jean de Luz, sedative climate of, 217, suited to chronic kidney cases, 222
St. Moritz, iron-water spa, 234, 236
cases benefiting at, 235
constituents of its waters, 234
elevation of, 235
St. Sauveur sulphur-water spa, sterility remedied at, 237

Digitized by Google

Salicylate of soda, phenazon, etc., in combination, in treatment of gouty neuralgia, 132
with acetanilid as antineuralgic, 136 [119
with antipyrin in fibrositis,
Salicylates, the (*see also* Aspirin), in gout, points to heed, 166-7
Salin-Moutiers, bathing establishment at, 230
Saliva, accessories to, in digestion, 39
nature of, in sthenic dyspepsia, 51
Salsomaggiore for winter treatment of fibrositis, 121
Salted foods (*see also* Common Salt) unsuitable for gouty persons, 163, and for sthenic dyspeptics, 52
Sarsaparilla and its uses, 321
Savill, Dr., *cited* on chloride of calcium for pruritus and hæmorrhage, 318, his cures of the former, 317, formula given for it, 318
Scarlatina, poison of, a cause of arterio-sclerosis, 188
Schwalbach, iron-water spa, 234, 236
cases likely to do well at, 235
constituents of its waters, 234
elevation of, and other advantages, 235
Sciatica (*see also* Neuralgic Fibrositis), association of, with lumbago, reasons for, 122
Sea-sickness largely due to ocular perturbation, 103, 104, treatment of, previous and immediate, 103, 104
Secretin, essentials to the formation of, 39
Sedative (or relaxing) climates: cases to which suitable, 219, 220
definition of, 276 [221
equability of, a main feature,
headache due to, medicine for, 148
Sedative (or relaxing) climates: instances of, 217
physiological effects of, 217
Sedative qualities of bismuth, 48
Sedentary habits, diminution of food demanded by, 256, 266-7
Seigle's steam spray producer for 'hospital throats,' formula for fluid for (Durham's), 35
Semon, Sir Felix, *cited* on indications of œdema of the glottis, 14
the value of sarsaparilla in syphilitic cachexia, 321
Senna, use of, in laxatives, 86, 87, with prunes in the same for children, 89
Septic sore throat, *see under* Sore throat
Septum, deviations of, headaches caused by, 144, 147, cure for, 148
Serum treatment (Wright's) for boils, 184
Sex in relation to gout, 158
Shock, hiccough induced by, 66
Sick headache, vomiting associated with, 102
Sidbury, longevity prevalent at, 224-5
Sidmouth:
Nauheim treatment provided at, 239
sedative climate of, suited to chronic kidney cases, 222, to winter treatment of fibrositis, 121
Sinking feeling in dyspepsia mistaken for real hunger, 46
'Sir Andrew Clarke's pill,' 94
Skin:
action of, how induced in renal disease in sedative climates, 220-1
excretory function of, clothing in relation to, 247-8 *and note*, 248
in relation to dyspepsias, 43

Digitized by Google

Skin, excretory function of, in relation to gout, how best stimulated, 174
exudative conditions of, chloride of calcium in, 316-7
gouty affections of, treatment of, 183-4
gouty furunculosis of, 156
gouty psoriasis of, 156
response of, to heat and cold, clothing in relation to, 244
cold bath (matutinal), in relation to, 245-7
two important functions of, 247
Skin diseases:
arsenic in, caution required with, 302-3
forms of, benefiting at Luchon, 237
value in, of mercury and its salts, 300
parasitic, value of formalin-glycerine in, 315
Skipping as an exercise for the abdominal muscles, 270
Sleepiness (by day) a symptom of chronic constipation, 82
Smith, Dr. Eustace, *cited* on the addition of ergot to arsenic in the treatment of chorea, 306
Sneezing a symptom of sthenic dyspepsia, 46, 50, 59
Sodium bicarbonate as an anteprandial digestive, 42
Sodium biurate, deposit of, modern view of its import and importance, 186
Some drugs and their uses, 273
Sore throat:
diphtheric:
difficulty of diagnosing, 22
aids thereto, 23
treatment for—
by antitoxin, 23, 25
by drugs—
imbibed, 23-4
injected, 25
septic, 26, 28
Sore throat, septic:
sometimes mistaken for cases of typhoid, 32
a diagnostic point to ℞ note, 33
temperature often insignificant in, 27
temperature, taking in, a warning, 30
treatment of, in high temperature and after, 29; formalin for, Jordan *cited* on, 315
tonsillitis, 22, 25 *and note*
cause of little understood, 26
determination of, importance of, and methods to be pursued, 26-7, 30
treatment of, in high temperatures, 27, 28, and after, 28
Southwaite, high rainfall at, 211
Sovereign remedy for sore throat, a formula for, 29
Spa, an iron water spa, 234, 236
cases likely to benefit at, 235
constituents of its waters, 234
elevation of, 235
Spa treatment, annual, a preventive of insanity, 330
as associated with change of air, 225
different spas suited to different complaints, 225-40
for chronic constipation, its great advantages, 85, especially for children, 86, its occasional failures, 89, possibility of carrying out at home, 86, prescriptions for, 87, their applicability discussed, 88-9
for fibrositis, 121
for gouty arthritis, 180 *and note*
Spas, fashion in choice of, 228
Spirit-drinking in relation to gout, 159, risks of, 262-3

Digitized by Google

Spts. æth. nitrosi, as a diuretic in treatment of gout, and formula for, 172
Squill, action of, on the stomach, 11
Squint to be noted in examining for insanity, 325
Staphylococci in the hair follicles the cause of boils, 184
Sterility in women, spas at which it is cured, 237
Sthenic dyspepsia, *see under* Dyspepsia
Stiff neck a form of myalgia, 122, 123
Stockman's definition of rheumatics *cited*, 114-5
Stomach:
gouty affections of, causing dyspepsia, 156
muscular condition found in, in asthenic dyspepsia, 56
organic affections of, causing hiccough, 66
not the only location of causes of sthenic dyspepsia, 54
undue retention of food in, the *causa causans* of dyspepsias, 40, symptoms of, 41, how relieved, 41, 42
weakness of, a contra-indication of squill, 11
Stomach lavage, formulæ for, 52
Stomatitis, aphthous and ulcerative, formalin combination for, Jordan *cited* on, 315
Stanton's version of the Riva-Rocci hæmomanometer, 193
Strathpeffer, bracing climate of, 27
Strychnine:
antiseptic effect of, 29
value of, in diphtheria, how administered, its action, size, and dose, 25
with HCl in relief of gastric asthmatic attacks, 277, value of arsenic with, 277-8, formula for, 278
Strychnine:
with pepsin and HCl in conjunction, in treatment of asthenic dyspepsia, 57, drawbacks to, 58
with theobromine in preliminaries to use of digitalis, 289
Subnitrate of bismuth, form preferred by the author, 314, hints on use of, as digestive, 48-9
Subsoil, influence of, on climate, 207
Succinate of iron in biliary colic, value of, Carter *cited* on, 300
Sugar in relation to gout, 161
Sugar-and-soap mixture for boils, why it is of use, 313
Sulphate of copper for broken chilblains, 308
Sulphate of magnesium in combination as a purgative in gout, 168
Sulphocarbolate of sodium in mixtures for flatulence and its cause, 64
Sulphur-water spas, 236-7
Sulphur waters, external use of, best for gouty persons, 180 *note*
Sunshine in relation to change of air, 209-11
'Supporting,' errors regarding, classes by whom these are held, 53
Switzerland, bracing health resorts in, 217
Symptoms recurring about 4 or 5 a.m., deduction to be drawn from, 50
Syphilis:
mercury a specific for, 294-5
poison of, a cause of arterio-sclerosis, 188
Syphilitic affections, iodide of potassium in treatment of, 275
cachexia, value of sarsaparilla in, Lemon and Allbutt *cited* on, 321
Syringing the ears as a cure of cough, 12

Digitized by Google

Syr. pectoralis rubis of Ferris and Co. an agreeable cough mixture, 36

Tabes, pains of, relieved by acetanilid, 135
Tachycardia in association with small, hard, contracted artery, significance of, 194
Tannigen a good symptomatic astringent, dosage of, 99
in treatment of gouty diarrhœa, 185
Tea and coffee forbidden to gouty patients with high arterial tension, 199
Teeth in relation to headache, 144, to neuralgia, 133-4, treatment for, 134-5
Temperature:
climatic, and change of air, 209, 215-16
equability of, important in chronic invalidism, 215, and in forms of fibrositis, 118, 125, invariably associated with high relative humidity, 221
personal—
degree of, in diagnosing tonsillitis, 27
erratic, indicative of chronic constipation, 83
high, in true influenza, 19-20
when not due to any obvious cause, throat examination advisable, 32-3
Tereben in relief of flatulence, 64-5
Terrol in treatment of chronic constipation, 92, dosage of, 93
Theatres, impurity of air in, 249
Theobromine:
best of all renal stimulants, 151
as a diuretic, 173
value of, in high arterial tension of gouty origin, 199
Theobromine and strychnine as preliminaries to use of digitalis, 289
Thompson, Sir Henry, and his inquiry as to the eight drugs preferred by his guests, 274
Thomson, St. Clair, *cited* on essentials in a fluid for nasal douching, 5
Thymol with calomel in typhoid fever, 299
vaselin in the treatment of boils, 313
Thyroid extract:
internal use of, to arrest undue falling of hair, 301-2
in treatment of high arterial tension, 201
Tight clothing, form of headache induced by, 147, tendency to chilblain provoked by, 307
Tight-lacing, a cause of chronic constipation in women, 78
Tobacco, abuse of, leading to high arterial tension, 32
poison of, a cause of arteriosclerosis, 188
Tongue, the, in chronic constipation, 84
in sthenic and asthenic dyspepsia, 44
traction on, in relief of hiccough, 67
Tonic after cold, quinine for, form in which preferable, 8, 9
general, arsenic as, 303
Tonsils, enlarged, headache caused by, 147
Tonsillitis and tonsillitic sore throat:
diagnosis of, difficulty of deciding origin by means of, 25-6
importance in, of careful examination of the heart, 27-8
non-diphtheritic, 25 *and note*
causes of, and consequences, 25-7

Digitized by Google

Tonsillitis and tonsillitic sore throat:
in relation to true rheumatism, 113
treatment of, preliminary purgative for, 30
Tonsillitis, treatment of, value of aconite in, 27, and of guaiacum, 28, formula for, 28
Torticollis, 122, 123
Touch, pains and temperature, testing of sensibility to, in suspected insanity, 327
Toxæmia as cause of headache, familiar instances of, 149
Toxic effects of digitalis, 287, how avoidable, 288, pulse indicative of, 288
Toxins in the blood, how they induce neuralgia, 129
Toxins, intestinal, causing mental troubles, 329
Tracheotomy for œdema of the glottis, 15
Travel, aimless, inadvisable for incipient lunatics, Jones cited on, 329
Treatment, results of, as a means of differentiating between the two forms of dyspepsia, 45
Tremor in relation to insanity, 327, 328
Trinitrin in treatment of high arterial tension, 201
Trional as a substitute for arsenic in certain cases, 306
Tubercle (*see also* Phthisis) the usual cause of arthritis in children, 182
Tuberculosis not the sole but the chief disease due to polluted air, 253, value of sarsaparilla in, 320
Tumours, intercranial, as a cause of headache, 146, and of hiccough, 66
Turkish baths, pros and cons of, 175-6
Typhoid fever, poison of, a cause of arterio-sclerosis, 188
septic throat cases, sometimes
Typhoid fever:
mistaken for, 32, a diagnostic point to note, 33
tympanites of, hiccough an accompaniment of, 66
value of small doses of calomel in, 298

Unguentum iodi for chilblains, 308
Unguentum resinæ for chilblains, 308
Universal Vaporizer (Oppenheimer's), fluid for use with, and applications of, 7
Uræmia, pilocarpine inadvisable in, 174
Urgency orders for committal of private lunatics to asylums 333-5
Uric acid in relation to gout, 169, the modern view, 186
Uric-acid-forming foods condemned by Dr. Haig, 254 *and note*, 255, 256
Urinary disinfectants (internal), helmitol and urotropin, 315-6
incontinence of the aged, cantharides in relief of, 311-2
passages, sedative action on, of buchu, 170
Urine, condition of, in relation to diphtheria diagnosis, 23
need of care in examining in cases of vomiting, 100-1
Urotropin, 315
in cystitis and in typhoid, 316
Urticaria ameliorated by use of chloride of calcium, 317
magnesium sulphate in, 317
Uterine troubles benefited at Eaux Chaudes, 237

Van Someren, Mr., *cited* on mastication of food in relation to general health, 254 *and note*, 255, 259-60

Digitized by Google

Vascular contraction, how combated, 178
dilatation, 177
relief of, means for, in treatment of gout, *see* Skin action, how stimulated, *under* Gout
some consequences of, 178
Vaseline, method of treatment in chronic constipation, 81, 92-3
Vaso-constriction and vaso-dilatation as causes of neuralgia, 129
Vaso-motor constriction as a cause of headache, drugs useful in treatment, 152
mechanism, disturbances in relation to giddiness, 108, 109, to neuralgia, 129
Vegetables and fruits good for gouty persons with high arterial tension, 199
Ventilation, efficient, as a preventive of colds, coughs, etc., 2, 3
Vertigo, aural, *see* Ménière's disease
Vichy:
constituents of the waters, 227, 228
elevation at, 228
type of invalid to whom suited, 87, 121, 180 *and note*, 227
Vittel waters similar to those of Contrexéville, 232-3
diuretic properties of, 173
in high arterial tension of gouty origin, 199
Vomiting:
causes of, as separate clinical entity, 99 *et seq.*, 141
after anæsthetic, bromide of potassium enema useful in, 284
cerebral, 100
sudden, complete and painless, what it indicates, 101
Vomiting:
symptoms of—
chronic constipation, 82
intracranial mischief, producing headache, 146
migraine, 145, 146
usually symptomatic, sometimes otherwise, 99, treatment in relief, 105
value of arsenic in, 303

WARMTH, applications of, in fibrositis, 118, 120, 125, and myalgia, 123
Water:
infusions in, for gout, 164-5
large imbibition of, essential in gout, 163-4, 170, how and when to be given, 164
still, preferable to sparkling, 168
Weather, *see* Bracing *and* Sedative climates
Whisky, 'wholesomeness of,' a comment on, 263
White fibrous tissue, the, pathological changes in, that which constitutes rheumatics, 114-6
White precipitate of mercury, value of, in pruritus pudendi, 300
Whooping-cough a cause of vomiting, 101
efficacy of the nasal douche in arresting fluid for use in, 6
Widal cited on relation of common salt to uræmic symptoms, 163
on retention of chlorides in renal inactivity, 162
Wiesbaden, cases likely to do well at, 226, 229
Wilks, Sir Samuel, note by, *cited* on opium in influenza, 20
Windows, open, the chief means of house ventilation, 253-4
Wines safer than spirits as stimulants, 263, 264

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Wiriness of pulse an indication of high arterial tension, 194
Women:
the chief sufferers from chronic constipation, 77
why so, 78
sthenic dyspepsia, 53, 56
falling of hair in, mercurial salts to arrest, formula for, 301
forms of gout affecting, 158, period of life at which most susceptible thereto, 158
Women, some causes of mental instability in, 330
Woodhall Spa for fibrositis (summer treatment), 121, for gouty arthritis, 180 *note*
Wool or flannel, unwisdom of wearing next the skin in sthenic dyspepsia, 47
Work, physiological advantages of, 242-3
Working classes, form of dyspepsia chiefly affecting, 55
Worms, intestinal, a cause of gastric cough, 7
Worms, relation of, to chronic constipation, 83
Worry, etc., in relation to arteriosclerosis, 188
Wright, A. E., *cited* on action of citric acid on milk, 319-20
on chloride of calcium, effect of, on the blood, 316
on sugar-and-soap mixture for boils, why efficacious, 313
Wright, Professor, serum treatment introduced by, for boils, 184

XANTHINE, 151

YEO, DR. BURNEY, *cited*:
on bismuth, 47
in favour of lime-water in vomiting, 105
on vaso-dilatation as a cause of pain of neuralgia, 129
chlorine mixture used by, in typhoid fever, 298

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